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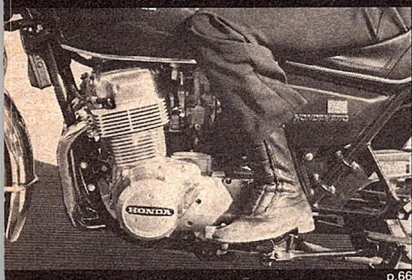
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CIRCLE NO. 27 ON READER SERVICE PAGE.



p.66



p.53

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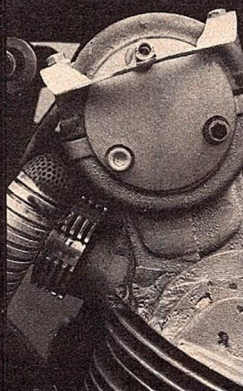
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This Month's Cover: Jolted to the core by the spectacular effort made last month by Blurro P. Bottomcon, the lens world's newest wonder-boy, old-timer Fuzzo Porkbody, with his Brownie in one hand and God knows what in the other, clicked off this action-packed portrait of the Honda 750 Automatic. "It ought to put that upstart Blurro in his place," Porkbody says. "If Bottomcon's lens is his life, mine is my raisin d'etre."



Road Tests

- 39 Rokon RT-340-II
America's other manufacturer, hanging in there.
- 53 Yamaha XT-500 Enduro
A long time gone, but a long time here.
- 66 750cc HondaMatic Two-speeder
You don't know whether to shift or go blind.

Features

- 48 The Fire Engine
The Hailwood MV: splendid then, splendid now. By Phil Schilling.
- 58 Product Evaluation: S&W Air Spring Shock Absorbers
Conceptualized for comfort, built for speed. By Cook Neilson.
- 64 Tempest From a Teapot
Can-Am 175cc water-cooled single.

Competition

- 28 Daytona 200
Could you call it a surprise? By Cook Neilson, Phil Schilling and Gordon Jennings.

The Shop

- 35 Porting by File
Of course it's sculpture. What else? By Gordon Jennings.
- 46 Honda CB-500/550 Head Leak Fix
Let's hear it for silicon seal! By Jess Thomas

Technical

- 44 How Things Work: Tires
John Dunlop got it right the first time. By Gordon Jennings.

Departments

- 4 Editorial / Great Victories / Cook Neilson
- 6 Pipeline / Cosworth-Norton / Jim Greening
- 11 Cycle Test Index
- 17 Tips / A Plug For Plugs
- 20 Letters / The Garden
- 101 Newsline / Got some whip-it-out handy?
- 118 Book Review / Baja Traveler / Dave Holeman
- 120 Classified Ads / Goods and services new and used
- 123 Readers Service / How to find what you saw and liked



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CYCLE

THE HONDA REPORT

May, 1976 HR #29

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Big Bike Bonus Generates Nationwide Interest.

Hundreds of value-conscious motorcyclists have been visiting their Honda dealers to check the savings available during the Honda Big Bike Bonus. Buyers have been saving \$30 or \$80 on selected Honda models—in addition to the best deals they can make with their dealers. Both road and on/off-road bikes are included in the Big Bike Bonus. The CB-500T, CB-400F and CB-200T are the road models; XL-350, XL-250 and MT-250 are the on/off-road bikes. To take advantage of these savings, see your dealer soon. *Offer ends April 30th.*

New CR-125M Passes Professionals' Tests.

Recently Team Honda members Tommy Croft and AMA 125cc motocross champion Marty Smith rode stock 1976 Honda CR-125M bikes to a one-two finish in a Continental Moto-Sport Club sponsored motocross race in California. After the race, the two reported on remarkable similarities between the new 1976 production CR's and the works bikes they had been riding in professional competition. According to Smith and Croft, there was no appreciable difference between the handling of the expensive, hand-built works machines and the 1976 CR-125M. "They even sit the same," said Smith. Saddle height, the relation of different components, "the whole feel" was seen by both as being very like that of the works bikes. If *you're* interested in how a Honda works bike feels, or if you would just like to be more competitive in your next moto, look for the 1976 CR-125M at your local Honda dealer.

SCORE Honors Honda with Off-Roadsman Award.

SCORE, the major sanctioning body of off-road racing in America, has awarded its prestigious Off-Roadsman Award to Honda for 1975. The membership of SCORE recently cast ballots in an issue of the *SCORE International News*, where they also named Honda the 1975 Motorcycle Manufacturer of the Year. The Off-Roadsman Award is particularly significant because it represents the opinions of thousands of dedicated off-road enthusiasts who know motorcycles and who demand the utmost in performance and dependability from their machines.

Honda Introduces New Tune-up Kits.

Honda recently announced the introduction of a new line of self-service tune-up kits specially designed for Honda owners who do their own tune-ups. The new kits are available at many Honda dealers. And they contain just about everything the do-it-yourself mechanic needs to keep his Honda in great running condition. The colorful, bubble-packed kits include spark plugs, points and condenser, and each set is carefully matched from Honda Genuine Parts for all four-cylinder and most twin-cylinder Honda models. And there are step-by-step tune-up instructions on the back. Always choose Honda Genuine Parts for your Honda.

Always wear a helmet and eye protection when riding. CR's are designed primarily for motocross use and are sold "as is" without warranty. PROPOSED ANTITRUST SETTLEMENT: The hearing on the proposed settlement in *Hemley v. American Honda*, referred to in the April issue, will take place on May 21, 1976, at 2 p.m., before Judge Richard Owen at the U.S. Courthouse, Foley Square, N.Y., N.Y.

CIRCLE NO. 39 ON READER SERVICE PAGE.

Great Victories

● Since the mid-Sixties the AMA, as far as *Cycle* Magazine is concerned, has given its members much to be disappointed about. Certainly Gordon Jennings, when he was Editor, could not be accused of restraining his enthusiasm while caterwauling, claws out, up one side of the AMA and down the other. When I became Editor in 1969 I found much unclawed epidermis on the AMA's body and had at it my own self, and at will. I don't know when, exactly, it began to change. Probably when Russ March took over the directorship. Russ was eventually asked to leave due to fiscal irregularities, but while he was there he opened a Westerville window on the rest of the world bringing an international sensibility to the AMA, and opened another one facing Washington through which we all could see the influences at work in that rat-hole.

Ed Youngblood took over when March left, and his first task was administering the United States' first ISDT, which he did with grace, and under pressure. He has gone forward with the AMA's internationalism, and under his direction the AMA has had its share of success on the legislative front.

Many of us are bored with the legislative process, and I must confess, after nine years in the motomagbiz, somewhat defeatist in attitude. We rail about noise to our readers, and some states respond with ever-tougher noise restrictions. We implore you to write letters about important issues, and whether or not you write, official resolution to those issues seems invariably to be damaging. We are currently looking down the EPA's biggest-bore shotgun barrel waiting for that body to impose Federal emissions standards for motorcycles which will do motorcycling a terrible harm, and it does not seem likely that all the good sense the Motorcycle Industry Council can muster will turn those standards aside.

And yet . . . and yet. There are victories. When they come, they take us defeatist cynics by surprise. The AMA, with the help of many good men and true, convinced the New Jersey Garden State Parkway Authority to permit motorcyclists on their road, after a battle that lasted 14 years. It was a great victory, and while it may turn out to have been transitory, it was a great victory nonetheless.

Now there appears to be another one, over an issue that has galled motorcyclists for years. That issue is the helmet law.

Briefly, helmet laws are state laws—the Federal government is not empowered to write that kind of legislation. But while the Feds cannot make states enact helmet laws, they can make them wish they had. The stick is the Highway Safety Act of 1966, which gave the Department of Transportation authority to withhold Federal

highway safety funds if a state did not, among other things, come up with a helmet law. Since then 47 states did in fact introduce helmet laws; California, Utah and Illinois resisted, and in 1975, were threatened with loss of their Federal funds—which, in California's case, amounted to \$47 million.

The AMA began its big push in February of 1975, when Legislative Analyst Bob Rasor testified before the National Committee on Uniform Traffic Laws and Ordinances, a body which drafts recommendations to the DOT. Although the Committee voted against removing the DOT's fund-withholding capabilities, a strong impression was made—not only by Rasor, but by representatives from many other motorcycle organizations.

In June, Legislative Director Gene Wirwahn and Rasor went to Nebraska to meet with State Senator Jules Burbach, the speaker of the Nebraska legislature. The legislature had just voted against LB 328, a mandatory helmet proposal, but had decided to reconsider the issue. Rasor and Wirwahn proposed instead an alternative, in the form of a model motorcycle education bill. But by July things didn't look so rosy; Nebraska, pressured by the National Highway Traffic Safety Administration, passed full-scale mandatory helmet legislation, and it looked like the same thing was going to happen in Iowa and Oklahoma as well.

In September, charging ahead, Wirwahn and Rasor testified before the House Subcommittee on Surface Transportation, which then was considering three measures that would effectively remove the stick from the DOT's hand. Meanwhile, other AMA people were appearing at hearings in California, Utah and Illinois to discuss the same issue.

And on December 12, 1975, the United States Senate voted 52-37 in favor of an amendment introduced by Alan Cranston (D-Cal.) and Jesse Helms (R-N.C.) that prohibited the DOT from withholding funds from states which do not have mandatory helmet laws. The vote followed two solid weeks of intensive lobbying by Wirwahn, who said, after the amendment passed, "This is the best evidence yet of the political power of motorcyclists. Complications are still possible, but it appears we will succeed in sending legislation to President Ford which dictates a major change in the future policies of a huge Federal bureaucracy—the DOT." The House of Representatives subsequently passed a similar measure, and when the two are melded they will be presented to the President—who is expected to sign on the DOTted line.

You may argue that the AMA didn't really have all that much to do with the DOT getting its wings trimmed. Certainly the climate is right for any reduction in the awesome authority of Federal agencies in gen-

eral. But the matter had to be brought to the attention of the Senate and the House, politicians had to be persuaded to write bills, and focus on the matter had to be sustained—all of which Wirwahn did. Dr. James McClellan, a Senatorial Legislative Assistant, wrote to Gene, "Your personal contribution to this effort was really impressive. In two years of work here on Capitol Hill I have never seen a more commendable display of hard work, dedication, and competence than yours. To be sure, you are a tribute to the American Motorcycle Association, and every freedom-loving motorcyclist in America owes you a debt of gratitude."

California Congressman Glenn Anderson, who with Congressman Stewart McKinney introduced the House version of the bill, wrote, "The coercion inherent in Section 402 was dramatically brought to our attention by your testimony before the Surface Transportation Committee, before the Department of Transportation hearings, and I am sure, in the hundreds of conversations you had with Senators and Representatives."

I wasn't there, and I don't know for sure which of the AMA's thrusts proved to be the most significant. But reading a summary of Rasor's and Wirwahn's testimony before the Surface Transportation Subcommittee had a certain analytical sting that must have been hard to ignore. In that testimony it was pointed out that the DOT had no idea whether helmets reduced motorcycle injuries; that of the funds allocated to the states by the DOT, less than 1/3 of 1 percent were spent on motorcycle safety and education programs; that during 1975 fifteen states entertained bills or resolutions that sought to overturn their helmet laws; that while the DOT was empowered to withhold funds for failure to comply with twelve other directives related to safety, only non-compliance to the helmet directive caused the highway funds to be threatened; and that in general the DOT had not fulfilled its obligations as set forth in the original Highway Safety Act.

Assuming that President Ford in fact signs the amendment and makes it law, whether or not you have to wear a helmet will still be determined by your State legislatures. What has happened here is simply this: the Feds can no longer blackmail the states into compliance; and since local politicians are by necessity more responsive to the desires of their constituents (read neighbors), your ballot will determine to an extent whether you will have to wear a helmet. The unconstitutionality of helmet laws aside, that's the way it should have been from the beginning. It's that way now—thanks in large part to the AMA, and to Gene Wirwahn, and to Rob Rasor, and to dozens of others who fought a good fight, and won a great victory.

—Cook Neilson
CYCLE

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The Cosworth-Norton

● About 200 yards from the start line, the rising Brands Hatch roadway partially obscures the rider's view of the reverse-camber Paddock Hill Bend, which sweeps right and plunges into a 50-foot hollow. This rather nasty example of British circuit design has caused the downfall of many riders, and from time to time the Bend produces multi-bike crashes. It did that on October 25, 1975, decimating the "Superbike" field. The incident took out 10 seven-fifties including the Norton-Cosworth. The rider toll amounted to one serious injury, a couple of medical room cases and a number of walking wounded, among them Dave Croxford the Norton-Cosworth rider. On the following day, Alex George—replacement rider—circulated prudently in 20th position until hidden damage to the coolant system forced retirement. George, who had teamed with Croxford to win the June Production TT on Triumph Trident "Slippery Sam," said the Norton-

Cosworth-British-Challenge could be a winner after a full winter of development. But most people outside the Norton camp worried and wondered whether the Cosworth-powered racer would ever hit competitive style.

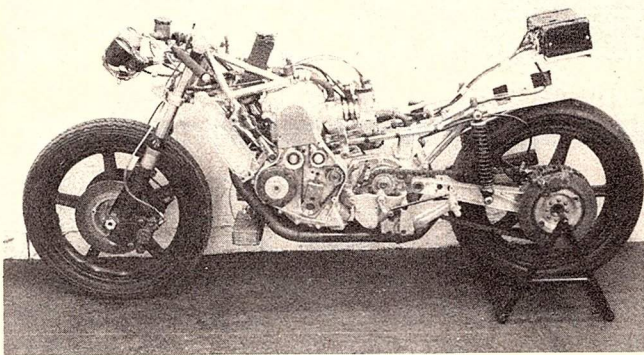
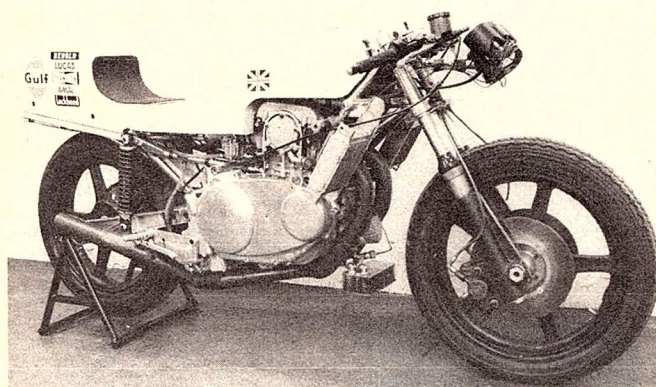
If a tidal wave of sentiment might count for anything, the Challenge would be victorious through 1976. Many good United Kingdom citizens have been anxious to see the Norton succeed, even to the point of neurosis. Others less moved by emotion—and foreigners—would welcome a four-stroke thrust into a world of racing dominated by two-strokes.

Assuming the Challenge proves competitive, cheers will reverberate throughout the European Continent. But that supposes that a world-class rider is engaged to strengthen the bike's competitiveness, that some sponsor comes along with \$250,000 and an open-ended commitment, that the tiny

Thruxton race shop survives as an entity, and that the wherewithall permits continued development at Norton and Cosworth. That's an awful lot of supposition to test anyone's faith. You might even accuse this writer of over-exercising the right to smear by obliquely pointing out the blackest eventualities. But in truth, this cool appraisal reflects the British Challenge crew's own estimation of the difficulties ahead; even Frank Perris, who lives to see the Challenge supreme and exudes self-assurance, inwardly sweats over the short-term financial situation of the project.

My own reservation, for what it's worth, is whether the Cosworth engine can succeed as a *racing engine*. Questioning here and eavesdropping there gets me no closer to an answer. The Cosworth remains the great unknown in the racing context.

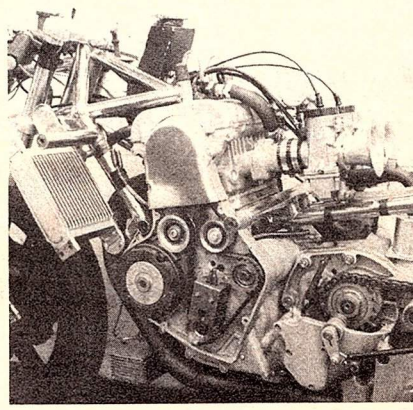
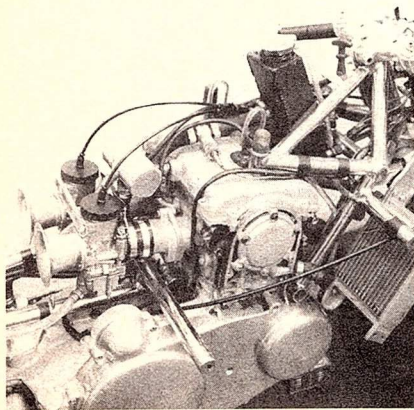
Without presuming to question Keith Duckworth's ability, he was constrained by



The Challenge is extraordinarily compact; the engine forms the middle section of the frame (above) including the swing-arm pivot. The swing arm has been machined from solid aluminum, and the brake caliper and disc mount outboard. The steering-head structure (.036-inch wall tubing) rises

at the front of the engine (below, left), with the radiator tank in the center. Two oil radiators hug the engine on both sides; overall width is three to four inches more than originally planned. Amal racing carburetors bear a certain external resemblance to both Mikuni and Dell'Orto

instruments. No army of technical-types mother over the Cosworth; it's a small, determined group (below, center) led by Frank Perris, second from right. Toothed belt drives the overhead cams (below, right); magnetic pick-ups for ignition timing operate off the left end of the crankshaft.





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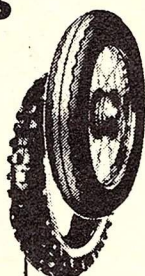
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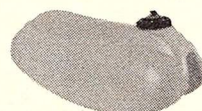
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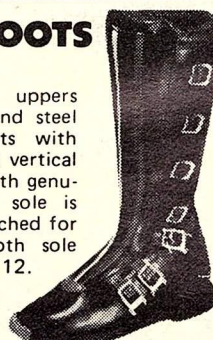
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the basic design concept and inhibited by financial considerations from the very start. Putting the darkest interpretation on the Cosworth project, it becomes another overweight and underpowered vertical twin which has racing-car engine features and still underestimates motorcycle requirements. Time and the march of events may have overtaken the Cosworth in its racing guise. Quite simply, the dual purpose road-racing role is dated, a relic of early Formula 750. Nowadays people don't bother trying to transform roadsters into racers, and anyone making the attempt inevitably starts at a disadvantage. Admittedly street origins are still detectable in Suzukis 750 racers and, stretching a point, there's a trace in the Kawasaki HR water-cooled. But creating a racing engine from three two-stroke cylinders is a vastly different proposition than extracting super-performance out of a four-stroke twin with roadster castings.

The Cosworth emerged as the thing it is because Duckworth was given these terms of reference: namely, to design and build a "vibration-free," environmentally clean, low decibel, dohc 750 twin, readily convertible to a racing specification. Given those considerations the castings would form part of the frame structure, with an integral swinging fork pivot, and the engine turned out with every appearance of a Great Lump. Actually the unflattering bulky look is exaggerated by Norton's very abbreviated frame structure. The Cosworth is reasonably compact for a 750 four-stroke. However, it is overweight, 40 pounds above the estimate, and there's little prospect of dumping more than 12 pounds by using magnesium alloy for the chain case and ancillary covers. (Formula 750 homologation rules bar more extensive employment of magnesium.)

Sophistication and complication are inseparable partners. For instance, the pressurized cooling system follows Formula One car practice and includes a swirl tank in which air bubbles are separated before the circulating water enters the radiators, en route to the pump. Poking up behind the engine, a cylindrical device performs an oil separating function in the return line; that's vital in view of the considerable air scavenging through the high-volume oil pump. The standard engine castings have rear isolastic mounting points which are unnecessary on the racing set-up. The oil compartment sacrifices extra capacity (desirable for the racing application) by having odd nooks and crannies for street-bike kickstarter mechanism. These things, and more, represent the penalty of compromise.

Had the engine been real-racer instead of roadster-cum-racer, it would have appeared in all-magnesium form and would have been much more compact and far lighter. The rear balance shaft might have been tossed out assuming the bike had a vertical-twin layout at all. And you cannot ignore the possibility of the DFV Formula One top-end design being adopted as an expedient method of bypassing expensive research into specific motorcycle needs. But the Cosworth roadster-cum-racer is what it is, and Norton must make the most of the available engine, horsepower and resources.

(Continued on page 10)

KAWASAKI KZ 900

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Engine Guard

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Safety Bar

CIRCLE NO. 51 ON READER SERVICE PAGE.

Thrupton is no refuge from reality, and the nine NVT Performance Shop staffers know it. So far, they have constructed an acceptably sleek (when fiberglass clad) machine. Certainly it is low at 30 inches, and will be lowered another three inches when a leading link front fork assembly replaces the Koni-damped telescopic. Less wonderful, overall width exceeded the optimum by three-to-four inches (although the Cosworth engine is narrower than the Commando). Norton then had to squeeze the twin radiators inwards without sacrificing the excellent rigidity of their whole steering head/front frame structure.

The comprehensively triangulated sub-frame, in .036-inch wall tubing, connects to the engine in four places; more tubes extend rearwards to carry the seat and the Konis, and the engine forms the frame in between. The swinging-fork arms which look like aluminum castings are in fact machined from solid for the prototype. The rear axle is "live," running in bearings housed in the fork ends; the brake caliper and disc are outboard of the left hand arm permitting extra-quick wheel changing.

A successful Challenge raced by a star rider would generate great excitement in Europe; the novelty value alone would strengthen the rider's negotiating hand in starting-money hassles. This message, it seemed, was not lost on Phil Read who volunteered to accept a Challenge and race it under the sign of "Team Read," hastening development through direct liaison with Keith Duckworth while un-named Team

Read backers pumped in \$200,000 to meet racing and workshop costs. The initial announcement was followed by irrational talk of Read moving in on Thrupton and possibly ousting Perris from power. Predictably the prospect—albeit remote—created a rift in Read/Perris relations. That was repaired soon enough by a declaration of intent to pool sponsor's money (\$80,000 as a fair estimate) and exchange technical information if the Read/Challenge association matured—which, judging by Read's disparaging comment ("Useless thing to race") hardly seemed likely. Furthermore Read wanted Duckworth to supply (at short order) an engine shorn of 50 pounds and invested with 10 extra horsepower. That was just impossible. It's only reasonable to assume the Cosworth has the maximum horsepower, allied to good torque characteristics, that it's likely to have without radical revision of the current state of art. Of course, casting most things in magnesium is feasible, and would save weight. But you cannot buy Duckworth horsepower on demand. A super-power Cosworth would cost a lot in time and money, putting 1976 racing out of the question. In any case, Cosworth is committed to improving the engines heading Norton's direction. So the Read/Norton connection collapsed again—and for good.

Perris and Company operate in an old airfield building leased from Dennis Poore. Their continued existence depends on running a viable racing team, obtaining money to sustain the team, building 25 homologated Cosworth-powered racers, and find-

ing enough clients with \$10,100 to buy them. Ambition runs to fielding two riders and four machines to contest the major European Formula 750 meetings. Soliciting sponsors has become an habitual and harrowing occupation, but if outside money is not forthcoming, the team will stick to British meetings, supporting Dave Croxford alone.

In February a supporters' club was launched to drum up patriotic support, and the early response brought in \$2000 over four days. By way of contrast, an earlier appeal for dealers to donate \$1500 towards Backing British Racing found only three in responsive mood. But hopes soared when the Spanish Motorcycle Federation promised to finance a factory-prepared Norton-Cosworth for Victor Palomo to race in the FIM Formula 750 Championships.

The few riders to have test-ridden the Challenge unanimously praise the wide spread of power, which comes in at 6000 rpm and runs beyond the recommended 10,000 ceiling. They glow enthusiastically over the taut, precise handling and stability. They curse the rotten gearchange. When the prototype was stripped after 5000 kilometers of circuit testing, the engine internals were in perfect condition. The Cosworth is a bloody fine engine.

That much I know. But I can't tell you whether it will make a bloody fine racer, comparable to the two-stroke opposition, because the Cosworth-Challenge has yet to prove itself. Thrupton is certain that it will. If not, it won't be for the want of trying.

—Jim Greening

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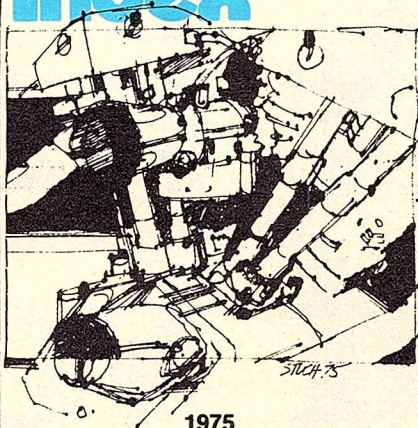
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CIRCLE NO. 62 ON READER SERVICE PAGE.

Cycle-Test Index



1975

BMW R90/6	August
BMW R75/5	November
CZ 250 MX GP	June
Can-Am 250 GP	July
Can-Am 175 MX2	November
H-D FLH-1200	August
Honda CB400F SS	March
Honda CB500T	February
Honda CB-750F	May
Honda GL-1000	April, August
Honda XL-125K1	April
Honda MR175	July
Honda CB550F	September
Honda CR250M	October
Husqvarna 175 Cross Country ..	August
Kawasaki KS-125 Enduro	February
Kawasaki 903 Z1-B	January, August
Kawasaki KD-175	October
Kawasaki KH400	December
MV August 750S America	May
Montesa V75 Enduro 250	March
Moto Guzzi 850-T	August
Norton 850 Interstate	August
Penton Mint 400 Enduro	May
Suzuki RE-5 Rotary	January, August
Suzuki GT-750M	May, August
Suzuki GT250M	July
Suzuki GT380M	September
Suzuki RM125	September
Suzuki RM250A	December
Suzuki RM370A	December
Yamaha YZ-C 125 Monocross ..	March
Yamaha RD-125B	April
Yamaha RD200B	June
Yamaha MX 400B	June
Yamaha XS500B	July
Yamaha RS 100C	November

1976

BMW R90/S	January
Honda CB-125 S3	February
Honda XL350	February
Honda MR250	April
Honda CB-750A	May
Kawasaki KZ900 LTD	April
Laverda 1000	March
Maico MC400/5	January
Moto Guzzi 1000	March
Penton 175 Enduro	January
Rokon RT-340-II	May
Suzuki GT500	April
Yamaha YZ400C	March
Yamaha RD400C	April
Yamaha XT500 Enduro	May

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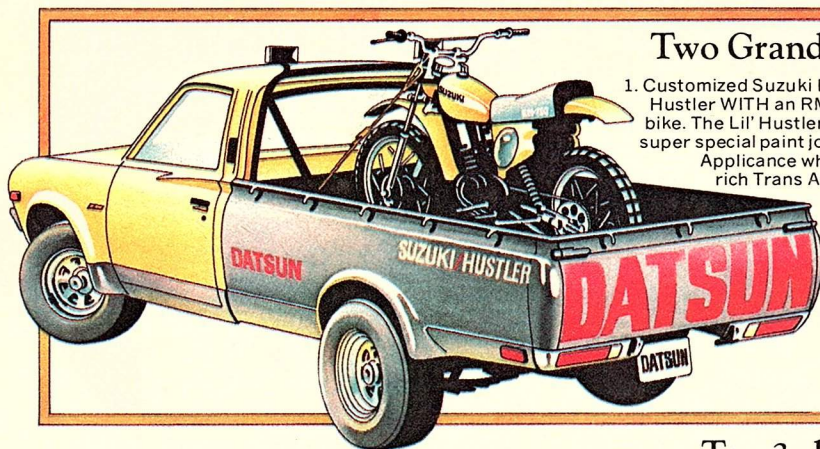
Ray-Ban
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Rochester, New York 14602

Don't just Go see if you

Just picture yourself cruising along in your customized Suzuki Datsun Lil' Hustler with a spanking new Suzuki RM250 just panting for action. Or, maybe

it'll be a pair of RE-5 Rotaries all set up for touring that'll be yours. Or any of the more than 2500 prizes offered in Suzuki's Carefreestakes.

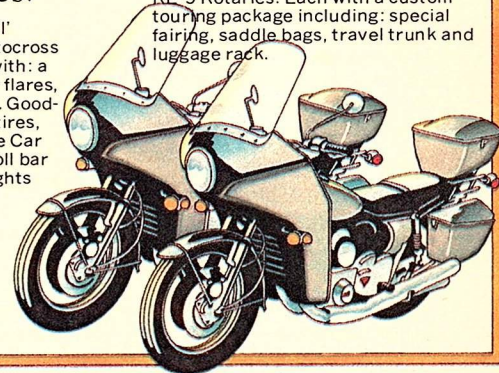
Suzuki Carefreestakes Prizes



Two Grand Prizes:

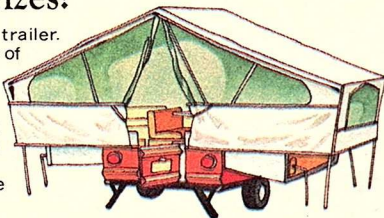
1. Customized Suzuki Datsun Lil' Hustler WITH an RM250 Motocross bike. The Lil' Hustler comes with: a super special paint job, fender flares, Appliance wheels, B. F. Goodrich Trans Am radial tires, Creative Car Craft roll bar with lights and an AM-FM radio.

2. A pair of custom painted Full-Dress RE-5 Rotaries. Each with a custom touring package including: special fairing, saddle bags, travel trunk and luggage rack.



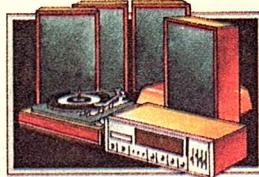
Three 2nd Prizes:

Apache Eagle camping trailer. Big enough for a family of six. Light enough to be towed by a compact car. The eagle has two double beds with thick foam mattresses and a four place dinette that becomes a snug double bed for kids.



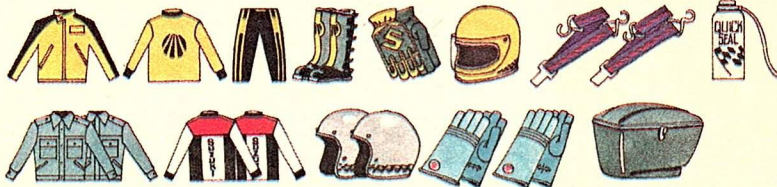
Ten 3rd Prizes:

Choice of: Panasonic Deluxe 4-Channel Entertainment System with a CD-4 record changer, built in 8 track tape player and four 6½ inch "air-suspension" speakers. OR, a Coleman Camping Outfit which includes: Propane bottle lantern, 3 burner stove, Insul 200 sleeping bag and a 13' x 10' Deluxe Oasis tent big enough to stand up in and stretch!



Fifty 4th Prizes:

Choice of: Suzuki Style Motocross Accessories — lined MX jacket, Black MX pants, pair of MX boots, pair of MX gloves, yellow full face helmet, plus more. OR Suzuki Style Touring Accessories including two matching sets of Silver helmets, Denim lined jackets, Touring gloves, and on and on.



Twenty-five Hundred 5th Prizes:



Suzuki brass and tooled-leather belt buckle.

...sit there. ...re a winner.

Read the following rules carefully and then hurry down to your local Suzuki dealer. You might be a winner already!

RULES:

1. Cut out the entry form and take it to your local Suzuki dealer. He has the key to the Suzuki Carefreestakes winners. You'll know on the spot if you're a winner. And what you've won.
2. To claim your prize be sure to complete the official entry form by printing your Name, Address, City, State and Zip Code, and the name of your Suzuki dealer. Mail your entry card via Register Mail to: L. Bierman, c/o Marden-Kane, Inc., 666 Fifth Ave., New York, N.Y. 10019. Winning entries will be verified by Marden-Kane, Inc., an independent judging organization whose decision is final.
3. If all winning roads are not presented for redemption of prizes the remainder of the 2,565 prizes valued at \$48,345 will be awarded in a random drawing from all entries received. Winners will be notified by mail. Only one prize per family will be awarded. No prize substitution permitted. Any applicable taxes are to be paid by the winner. Odds of winning are approximately 1 out of 355.
4. Sweepstakes open to all residents of the Continental U.S.A. except employees and families of U.S. Suzuki Motor Corporation, Suzuki Dealers, their advertising and promotion agencies and Marden-Kane, Inc. You must have a valid driver's license to qualify.
5. Residents of Wisconsin and Maryland need not take their entry to the local Suzuki dealer to determine if they are a winner. Send a stamped, self-addressed envelope to Suzuki Carefreestakes, c/o Marden-Kane, Inc., 666 Fifth Ave., New York, N.Y. 10019, to obtain a facsimile of the winning roads.
6. Sweepstakes expires midnight, June 18, 1976. All entries must be received by June 25, 1976. Drawing for prizes not claimed will be held June 30, 1976.
7. Sweepstakes void in Missouri and wherever else prohibited by law. Sweepstakes offer subject to all Federal, State and local laws and regulations.
8. NO PURCHASE NECESSARY.

SECOND CHANCE SWEEPSTAKES:

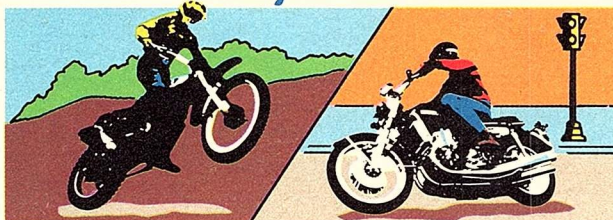
If you're not an instant winner — don't be "troubled." All prizes not claimed by June 18, 1976 WILL BE AWARDED in a Second Chance Sweepstake. So, no matter what, don't throw away the entry form. Mail it to: Suzuki Carefreestakes, P.O. Box 77, New York, N.Y. 10046. You may still have a chance to be a winner.

**Forget Your Troubles.
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Carefreestakes.**



Suzuki

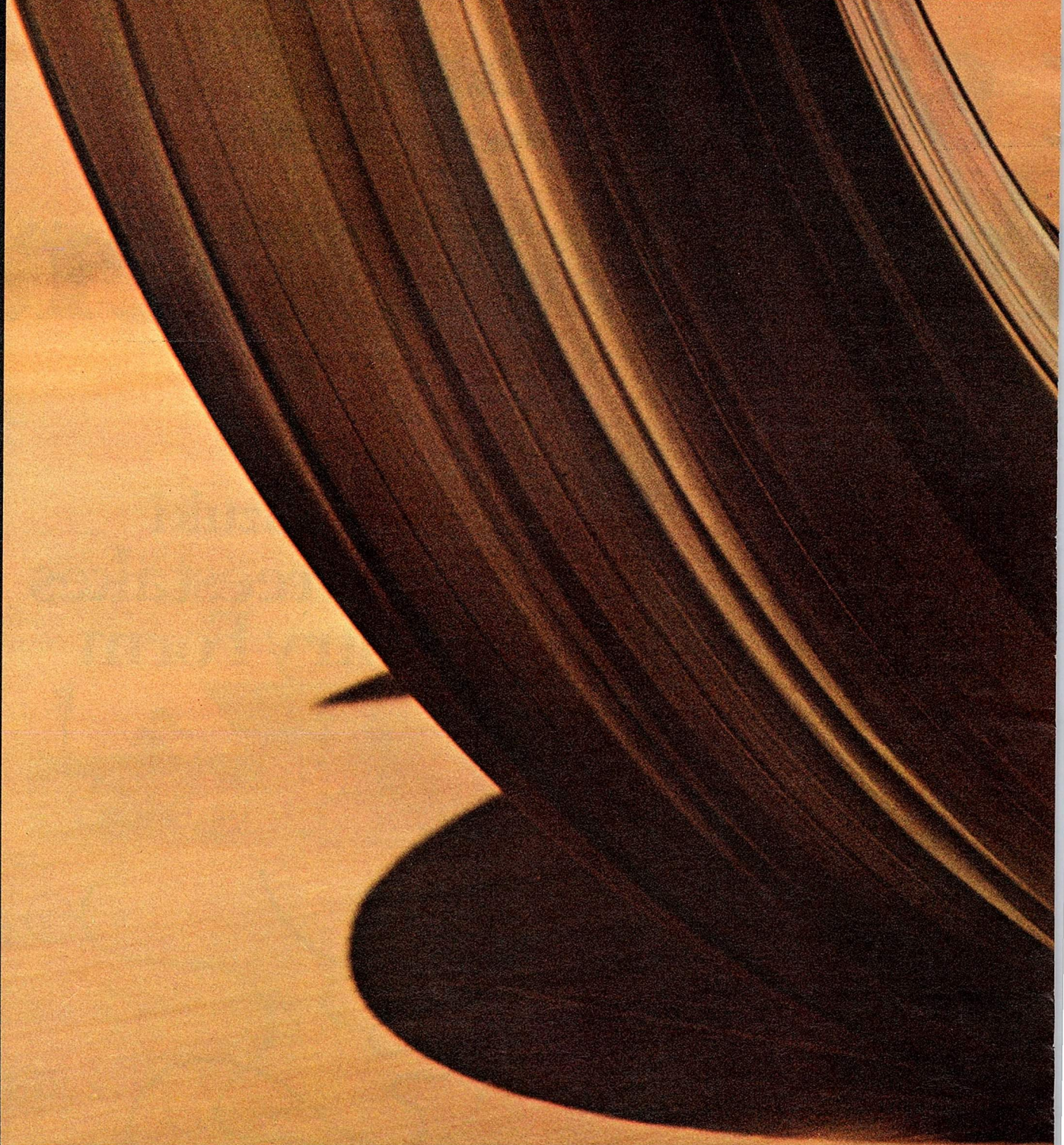
Carefreestakes Entry Form



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Mucho Macho



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Mucho

Jeep Honcho is all-Jeep Pickup. Engineered with traditionally rugged frames, axles, suspension. And Jeep 4-wheel drive—built in, not added on. Plus Jeep Pickups have a low stance for easier loading and entry, but—still have one of the highest ground clearances in the industry!

Honcho has mucho extras, too! The kind you'd choose: 10-15 Goodyear "Tracker A-T" tires mounted on special slot style wheels, a new bold brassy accent stripe and rear step bumper.

Macho

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**Jeep wrote
the book
on 4-wheel
drive.**

Tips

A Plug For Plugs

I was excited to see in a recent "Tips" column a letter concerning obtaining an 18mm socket for changing Honda 750 spark plugs.

That excitement lasted for about two days of searching for the nearby source of those sockets. Then my friendly local auto parts man suggested I try an American brand of plug. Both AC (123XL) and Champion (R8) plugs fit the 750, and these plugs require a good old U.S. of A. 11/16-inch socket, which is a lot easier to find.

Jack Hallett
Novi, Michigan 48050

LACK SLACK?

On the Honda MT 125, there is a little white electrical box mounted on the left side of the forks behind the headlight. This box is split horizontally and contains male and female jacks for Honda's quick-detach system. Running through those jacks is the set of circuits for neutral light, headlight, taillamp, turn signals, and instrument lights.

Due to insufficient slack in the wires coming up from under the tank, the male plugs tend to be pulled out of the box, or worse, break off. To prevent this, leave everything like it is but dismount the box from its rigid mounting. This allows the box to move around and make up for the lack of free slack.

I've done it, and never had another problem with the bike.

Paul Harmon
Bridgeport, West Virginia

CLEANLINESS IS NEXT

Most motorcycle engines seem to have an innate ability to leak oil on themselves and surrounding areas of the bike, which quickly picks up a layer of dirt. If you're a person who'd rather ride a clean machine than a dirty one, here's a tip on handling that oily film of dirt.

While your machine is still warm, spray the soiled areas with 409 spray cleaner. It cuts right through the oil, and when rinsed off will leave a nice clean surface. It won't hurt the paint either. However make sure you're using Formula 409. I once used Fantastik spray cleaner, and discovered that it will eat your engine's paint off wherever it touches, and will leave your motor a real mess. (At least on Hondas.) Be sure to spray into all the areas where it's hard to get your fingers, like underneath the carbs and between the cylinders—the kinds of places where you don't notice dirt accumulating. This can become a quick and easy routine for keeping your bike sharp, and it's a real timesaver compared to the usual method of washing.

Jeff Hastings
Eugene, Oregon

KAWASAKI S3

Anyone who rides a Kawasaki S3 400 probably will appreciate the bike's performance and maneuverability, but come to

realize that the machine has a few shortcomings. These deficiencies may be corrected fairly easily and cheaply.

One of the S3's problems is that it has only a 95–100 mile range, due to its thirst and a 3.7-gallon fuel tank. With an optional 15-tooth sprocket replacing the standard 14-tooth part on its transmission output shaft the bike still has enough muscle to move away from a red light on a steep hill without making you butcher its clutch, and gas mileage increases about 4 mpg on the open road.

Conventional petroleum-based engine oil quickly coats the pistons, heads, spark plugs and exhaust system with thick deposits. I switched to a synthetic engine oil (Klotz) and these deposits virtually disappeared from my bike's innards. If you make the same switch, flush the petroleum oil out of your bike's tank before pouring in the synthetic. The two types of oil may not be compatible, and if they interact in such a way as to block the oil pump or lines your engine will suffer.

I took the plunge after reading *Cycle's* articles on ignition coils and bought myself three Delco coils, at \$7.50 each. The ones made for a 1974 Dodge truck (part #U-500) fit under my tank rather well. The companion condensers cost \$.95 each, and a ballast resistor was \$1.85. Then the Delco parts were hooked up with Accel high-performance radio-suppression wire—which is available at any automotive speed shop—and the connection completed with Sparky non-resistor caps. I installed a set of Champion Gold-Palladium plugs, gapped at .035-inch, and was enormously pleased to find that my fussy two-stroke triple wasn't fussy anymore. In 14°F. New York weather, at 4:00AM, my bike needed only three kicks to start, and was ready to go after a minute of running with the choke on.

When I had to replace the S3's air cleaner I was appalled to find that my parts-man wanted \$11.00, plus tax, for a new stock element. So I started making the rounds of auto parts stores with my dirty air cleaner in hand, and finally settled on an element made for a 1963 six-cylinder Rambler, which is a near-perfect fit in the Kawasaki's air cleaner box and cost only \$2.69—including tax.

I've now ridden 2000 miles with the Dodge ignition, Rambler air filter and 15-tooth sprocket. And I've had increased plug life and gas mileage (around 40 mpg at 55 mph) with reductions in warm-up time and trips to the bank to withdraw more money for plugs, gas and filters.

Michael Joyce
Bronx, New York

CAUTIONARY NOTES

I've been following *Cycle's* "Gentleman's Express" articles with considerable interest, as I am interested in personalizing my bike but have no intention of conforming to any particular styling trend. Thanks for telling us



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about shimming the caliper hanger for brake caliper reversal, but you should have stressed that you've got to have some kind of adaptor to retain the speedometer drive. The alternative is about twenty dollars worth of (unnecessary) machine work. These adaptors can be obtained from, among other places, Dale-Starr for \$3.95 plus shipping, the part number is CFC #3, Gearbox Retainer.

Secondly, with regard to replacing the stock ignition coils with automotive coils: don't hang "trick coils" on CDI-equipped bikes without some careful tests being made (Mach III, 860 Ducati owners, and whoever owns the Laverda triple, please note). The same applies to aftermarket systems such as the Sebring CDI or the Gerex Multifire. If the impedance of the new coil(s) is much lower than stock, the increased current draw can damage the solid state components of the control unit. I checked this with Rex Sebring of Sebring Electronics and he confirmed it, saying that while there are doubtless many coils that might work better than stock, there are also many that could wipe out the unit.

Choosing a limiting resistor at random, or because it is what's used in a car engine, isn't any solution either. It might not be enough protection, it might be OK, or it might be too much, in which case the increased voltage drop across the resistor will decrease the amount available to the coil.

Stock coils are perfectly adequate for CDI systems, as they merely act as transformers, without the additional function of energy storage required with a points set-up.

For those of you that run car coils with a points ignition: high current draw might cause increased point wear and pitting, similar to symptoms of a faulty condenser, but this is admittedly less of a problem than blowing up a \$100+ accessory CDI. If you are interested in matching the current draw of your new coils to stock specs hook an ammeter in series with your points (one set at a time) and note the peak current while rapping out the engine. Then install the new coils, with a potentiometer wired in series with the ignition switch (hot) side of the coil(s). Adjust the pot until the current draw is equal to stock, then measure the resistance of the pot with an ohmmeter, this will be the value of the resistor you need. Its wattage rating will be determined by the peak current flowing through both sets of points times the voltage across the resistor, which is equal to its resistance times the current through it; ie $W = RA^2$, if each coil draws 3 amps when the pot reads 20 ohms, the value of the resistor will be 20 ohms, 720 watts (3 amps times 2 coils is six amps thru the resistor times 20 ohms is 120 volts times 6 amps is 720 watts) this example is intentionally extreme so no one will try to use the purely hypothetical values.

Brian Williamson
Seattle, Washington

BMW FLASH

If your '74-and-later BMW's turnsignal flasher burns out, you'll find that an original-equipment replacement costs about \$28.00. This part can be replaced with a #550 heavy duty automotive flasher that

(Continued on page 102)

OFFICIAL HONDA PERFORMANCE MANUAL

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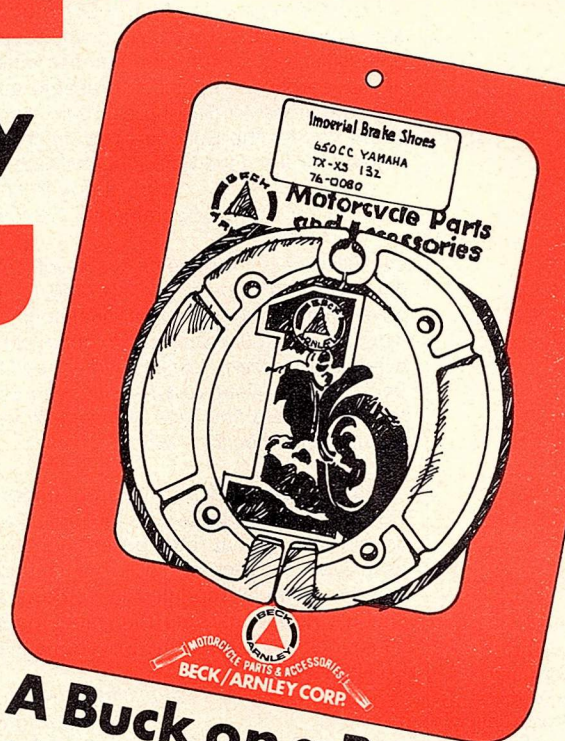
Fay Myers
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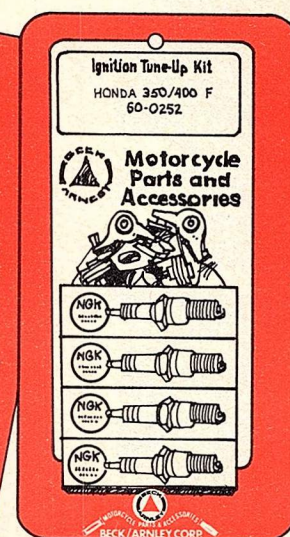
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Chicago, (Alsip), Ill. 60658

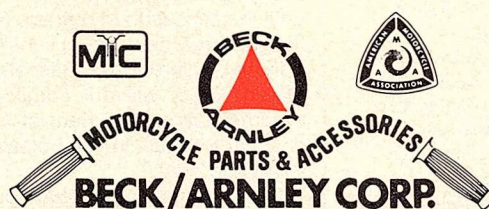
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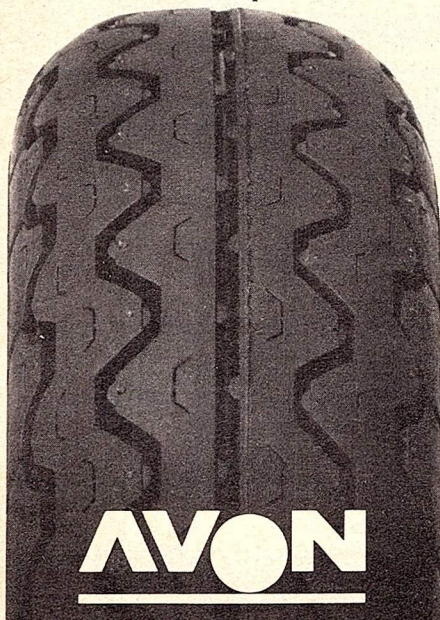
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CIRCLE NO. 47 ON READER SERVICE PAGE.

Letters

The Garden

Your Editorial in the March *Cycle* hit the nail right on the head. As both a cycle enthusiast (500cc 4-stroke thumper variety) and ex-aerospace engineer, presently a bureaucrat at the Air Resources Board, I commend you for the Editorial. You must have worked for the government at one time.

Larry Resnick
Sacramento, California

Our Editor responds that he has never, cross his heart and hope to die, worked for the government. He says that one need not work for or in a bureaucracy to get a feel for what goes on there, just as a writer need not be corrupt to write about politics, an alcoholic to discuss fine wine or insane to write about mental health. —Ed.

I have just read your March Editorial, "Throw The Rascals In." It is the most realistic and lucid look at "our" government that I have ever come across. I'd like very much to see this Editorial reprinted in some of the nation's newspapers so that more people can understand and define Government and Public Servant.

Eric "Oops" Norquist
No Address

Over the past twenty years I have from time to time been moved to write to the "Letters" section of some publication or other, but somehow always managed to busy myself with some worthwhile activity until the sensation of outrage (or esteem, as the case may have been) subsided. But your Editorial, "Throw the Rascals In!" (Cycle, March, 1976) will not admit of apathy or procrastination, and I am at long last constrained to break in (with pleasure, I hasten to add) to print.

Every legislator, politician, public servant, hell, every *CITIZEN* should be required to read it and try to understand it for what it is; a concise, bitter, amusing and terrifyingly accurate definition of the senseless and debilitating proliferation of government of whatever persuasion. I had thought to mail copies to a number of congressmen with whom I have a very casual correspondence, but I fear the possible result: a directive to the wage and price stabilization people to knock it off and let the EPA get on with the important business of legislating against motorcycles. I should mention that I am nearing the end of a five-year stint in Holland where motorcycling is nearly a way of life, and the enjoyment of the sport is much heightened by respect for the rider and a total absence of negative legislation.

I have owned a dozen machines since the mid-Fifties: British banger, Indians, Harleys and the later crop of Japanese two- and four-stroke. In July, 1974 I purchased a Suzuki GT 380, mainly on the basis of your April '74 road test. After two months and

some 4000 miles of complete satisfaction you ruined my life by publishing the GT 550 road test in August '74—"If it were more perfect it would be invisible"—so I bought one of *these* last spring and I can fully confirm your test findings; there is not a single aspect of the machine that can be seriously criticized. It is quick, comfortable, reliable and possesses excellent handling characteristics, and is a joy to use in heavy city traffic. I use a BP6ES plug (extended tip per Jess Thomas' recommendation) which does not foul, and although nominally of a hotter range than the B8 originally recommended by Suzuki, gives me good readings even at continuous work above 6000 RPM, presumably because the longer nose extends down into the cooling gas stream. You may be interested to know that I use a synthetic injection oil—VINA-MIX 3—and have for three years with no seizures, no coke or carbon formation in heads or exhaust ports, no ring sticking and virtually no smoking. In mixers (CZ, MZ) I have been running the same oil at 50:1 with excellent results. I do not know if it's available State-side, but I hope so!

In any event, congratulations on an excellent Editorial and a fine magazine; Jess Thomas' product reports (yes, I ordered a set of Lester Wheels!), Gordon Jennings' Tech reports and the road tests are first-rate and render a real service to the rider. Above all, your magazine is *literate*, which is a compliment to readers and editorial staff alike.

P.C. Keith Jr.
The Hague, Holland

GOLF?

I believe the trouble you people have is the same problem a professional golfer has in trying to write a story for the average hacker. According to figures I read somewhere, over 90% of all golfers shoot above 100. This is also true of motorcycle riders. You tend to write and analyze bikes for the 10%, not realizing that the other 90% don't know what a shock absorber is, let alone what its effect is when overheated. I believe that in many cases the manufacturer knows much more about the capability of the 90% than you do, and designs accordingly.

(No Name)
Denver, Colorado

No doubt, no-name. We have believed for some time that most motorcycle manufacturers maintain a cold and precise understanding of exactly how their products are being used, and by whom. Your letter advocates by its tone that what's good enough for most people is good enough, period. We disagree—and so, obviously, do some of the manufacturers with some of their models. Look at the strides that have been made in the areas of off-road suspension develop-

CYCLE

ment, street-bike engine smoothness and braking ability, and overall reliability. Progress comes not necessarily from improving the unacceptable—it comes, faster and faster now, from refining the adequate and pursuing the superlative. Far be it from us to assume that motivation for such pursuit comes directly from industry's desire to see us all on perfect motorcycles—it comes to an extent from the press of business. If Honda provides us with a disc front brake, Yamaha must follow, or pay the price with reduced sales. If Yamaha does well with low-priced two-stroke dual-purpose motorcycles, so must Honda, Suzuki and Kawasaki. As soon as one of the Japanese majors provides rear shock absorbers that function the way they should, the rest will be compelled to follow. Whether 90% of the people who ride consider the shocks they already have to be adequate thus becomes, in this context, irrelevant. Besides, to be against good shocks is to be against apple pie, which we most emphatically are not, and you quite possibly are. Is anyone unfamiliar with what happens to people who are against apple pie?—Ed.

BRIDGES AND ICE

I just received the February issue of *Cycle* and was reading Bob Swaim's letter of frost-bite. I am also a winter rider and really know what he means.

I have a question which I think would be of interest to other winter cyclists. One morning in January before going to work, I went out and checked the streets to see if it was slick (it wasn't), but had been raining during the night. So I got on my KZ 400 to let it warm up a few minutes, and started to work. After only a quarter of a mile or so, the rain started freezing and I was approaching a bridge approximately three hundred feet long. I geared down to 3rd and was going thirty miles an hour when I came on the bridge. The bridge was not solid ice but very slick. The instant the back tire went on the bridge, the bike started to slide. The rear end trying to slide right, then left. I completely let off the throttle, trying to keep the bike up. I thought if I had down-shifted again the back end may have slipped out from under me. The only thing I could think of was to just sit and try to ride it out. Funny thing was, I made it!

I came to a complete stop and then continued to work at 25 miles an hour. I might add that a numerous amount of autos had left the road because of this condition. The question is, exactly what should I have done in this unexpected situation?

David Bernard
Danville, Virginia

If you made it to the other side of the bridge with the rubber side down and in one piece, chances are you didn't do much wrong. For
MAY 1976

other bikers who may find themselves in the same predicament, we suggest the following:

1) Do not, under any circumstances, apply the front wheel brake.

2) The rear brake may be applied safely if it is pumped—but only if there is a pressing need to get stopped.

3) If there are no obstructions, you're best off if you leave the brakes alone, don't down-shift, and decrease throttle opening very, very gradually. On ice, engine compression alone is often enough to break the rear tire loose.

4) Always watch out for bridges when you're riding in the cold. Unlike a road, which loses heat only from the top surface, a bridge radiates its heat upwards and downwards. If it's cold and wet, a bridge will invariably freeze before the road that leads to it.—Ed.

POWER TO WEIGHT

I am writing this letter in reply to a statement made in February, 1976 *Cycle*, page 47. The article was written about the 402cc "four-stroke Maico" and I quote, "The bike

feels more powerful than the other two XLs primarily because of its incredibly low wet weight of 228 pounds. Based on an estimated 34 hp, its power-to-weight ratio is 6.7 lbs/hp, which is equal to the lightest and most powerful motocrossers produced today. Not bad for a private effort."

This, I feel, is a very broad and difficult statement to make. I know that Yamaha, Maico, Suzuki and Can-Am all make motocrossers with a greater power-to-weight ratio than 6.7 lbs./hp.

Equal to the lightest and most powerful motocrossers produced today? I can't see how this is true.

Jack Lamberti
Haskell, New Jersey

Glad you asked. Thumbing through some of *Cycle's* recent issues produced the following power-to-weight ratios: Yamaha YZ-C 125 MX: 9.60 lbs/hp; Penton Mint 400 Enduro: 7.71 lbs/hp; Yamaha MX 400B: 6.35 lbs/hp; Can-Am 250 GP MX: 6.59 lbs/hp; Suzuki RM-125 MX: 10.76 lbs/hp; Honda CR-250M MX: 8.44 lbs/hp; Suzuki RM 250 MX:

(Continued on page 22)

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CIRCLE NO. 48 ON READER SERVICE PAGE.

7.90 lbs/hp; Suzuki RM 370 MX: 7.38 lbs/hp; and Yamaha YZ 400C MX: 6.32 lbs/hp.—Ed.

R.S.V.P.

We would like to invite your readers who are bikers and/or photographers (professional or amateur) to contact us regarding a super-special Photo Exhibit we are planning for the month of August, 1976. The show will be titled "Free Spirit" and we hope to present to the public the good side of biking, racing, trail-riding, choppers, just messin' around, any pictures that capture the real joy of motorcycling. (There is no profit or sales involved here, only maybe some good P.R.).

Please contact us as soon as possible for further information.

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164 S. Market Street
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LIGHTS

You Americans had been saddled with archaic vehicle lighting laws for so long that a quartz-iodine bulb must be a novelty to some of you. May I correct some erroneous information given by your Canadian correspondent, Mr. Bjerkelund (Letters, Dec. '75)?

An "ordinary" bulb (I use that word for convenience only) has a tungsten filament surrounded by a "bottle glass" envelope filled with an inert gas, usually a nitrogen-argon mixture. The reason these bulbs do not produce as much light as is theoretically possible is because when the tungsten filament is heated it evaporates and the metal deposits on the cooler glass envelope. To obtain a reasonable life expectancy the tungsten is heated to less than the maximum possible.

Enter the quartz-iodine bulb. The filament is still tungsten, but the glass envelope is made of fused quartz (which is not heat-sensitive, is chemically inert and expensive!) and filled with iodine vapour. Elements like Iodine, Chlorine and Bromine are collectively termed halogens. Hence a quartz iodine bulb is sometimes termed a quartz-halogen bulb.

The advantage of this bulb is that the iodine vapour prevents the migration of tungsten to the glass envelope so the tungsten can be heated to higher temperatures, giving a whiter light and still giving a reasonable life expectancy.

If any one brand of bulb lasts for a shorter time than other brands then it was built to a lower standard or it had been designed to give a whiter light at the expense of long life.

Aarn Kooistra
West Australia

ABU DHABI DABBLER

I'm a 1000 GL touring rider that lives in Lake Charles, Louisiana and works in a forsaken place called Abu Dhabi for an oilfield service company. (Abu Dhabi is on the southern coast of the Arabian Gulf on the Saudi Arabia side.) I'm on a 30-30 contract so I'm home every other month. As I travel back and forth on my way out of the states I buy a copy of Cycle to read on the plane and to share among other bike lovers over here. I'll have to say I do enjoy it. I'm not

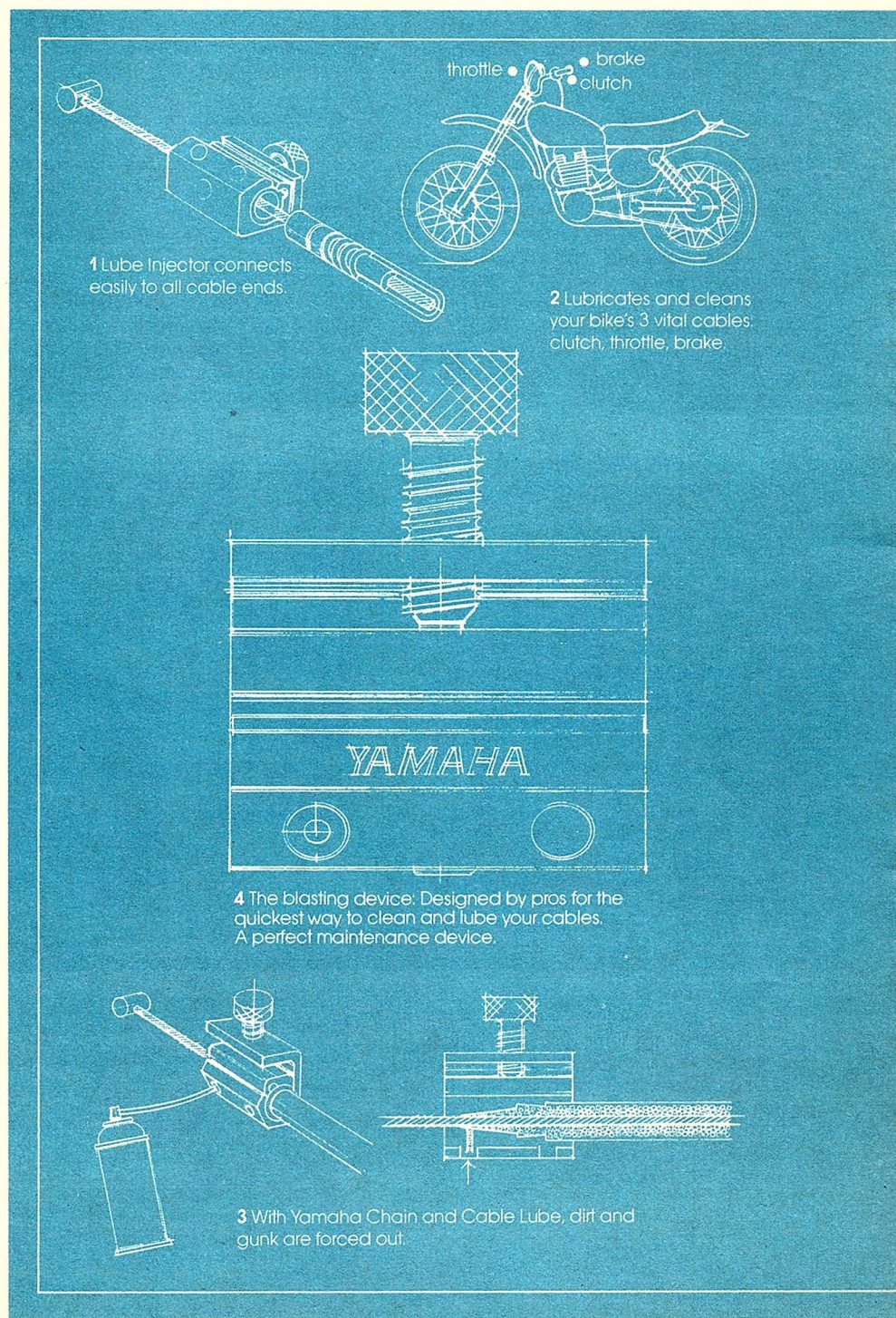
much on dirt bikes and trail riding, for that's just not my style, but tend to lean towards touring and the big speed races (I'm a K. Roberts fan). I find your articles on the big races (Daytona, etc.) most enjoyable. But I have one problem, I can't find out when these races are to be held for the upcoming year. If you could publish a schedule of some sort or maybe just let me know when and where they will be held, maybe I'll see you there.

Steve D. Ensminger
Abu Dhabi

You've missed Daytona, for starters. But with luck you can catch Loudon (June 19-20), Laguna Seca (July 31-Aug. 1) and Ontario (Oct. 2-3).—ed.

HAD IT

I have had it up to here and just couldn't take any more so I have to complain to you. I started subscribing to *Cycle* early last fall after your unparalleled and superb August touring issue came out. I must confess, I am not into dirt bikes, café racers, trials or drag racing; my interest is strictly street/touring. Basically, I just like to ride. However, I am keenly aware of the necessity of being mechanically familiar with my machine and to this end your magazine often serves good purpose in its technical columns. What I wish to protest is your overall gross neglect of simple souls like myself by devoting so much valuable space to so many esoteric forms of the two-wheeled sport. Granted,



there are things to be learned from specialized applications, and I acknowledge that a constant borrow-and-share relationship exists among all forms of motorcycling; but I think it has come to the point where you are depriving the simple rider of the kind of articles, tests, and evaluations that he is going to find relevant to his own experience.

Perhaps I am wrong, but I have had a growing suspicion that the majority of your readers fall into the same category as I—this observation is made from the kinds of mail you print in your "Letters" and "Tips" columns. I seldom see any comment elicited by one of your articles on "red-hot motocrossers" for instance, but take that touring issue . . . the majority of your "Tips" are also

submitted by people with street machines. Perhaps taking the time and expense of canvassing your subscribers would shed some light on this. I would truly warm my heart to see you give the same kind of promotion and encouragement to touring as you did for café-racing; and glorify plain old ordinary street riding the way you do Daytona and the ISDT.

Orly Johnson
Jackson, Illinois

WHO SAID WHAT?

I've long awaited the opportunity to write to *Cycle*, but sadly now find that I can't begin, "As an active motorcyclist for 32 years, I feel I must" (Never mind,

I'm sure at least three other letters to you today begin thus.)

I challenge your imputation that Churchill coined the adage "the law is an ass." If you will read (re-read?) "Oliver Twist," you will see that Charles Dickens' Mr. Bumble says, "If the law suppose that . . . the law is a ass—a idiot."

Corydon G. Voigt
Johannesburg, South Africa

RICKMANS

Being the proud owner of a Honda 750F and the brother of the owner of a Z-1, I read with great interest your article/test of the most recent savior of the British motorcycle industry, The Rickman Hyphenates.

After driving themselves into bankruptcy by building bikes that were a) overpriced and b) poorly made, the British now count on kits that are a) overpriced and b) poorly made for their continued existence.

Three to four thousand dollars for a motorcycle is a great deal of money. Perhaps I could justify such an expenditure (note I said justify, not afford) for a combination of British handling, Japanese dependability and the pride in owning a distinctive machine. However, after a careful perusal of the article, the only improvements that I noted were that the Rickman Honda had better ground clearance, better suspension, less wobble and better tires. I have already replaced my tires with Dunlop TT-100s (front and rear) and my shocks with Konis. This seemed to cure much of the wobble. The ground clearance I expect to be taken care of when I replace the exhaust system when the stock system wears out.

Also, for the amount charged for the kits, I would not expect to have to worry about peeling metal plating and low-grade decals. These flaws bring to mind stories of oil spots on the garage floor and lights going out at inopportune times, like at night.

Gentlemen, your magazine in its Editorials and articles is constantly extolling the British motorcycle industry. However, they have driven themselves out of business by building machines whose faults, i.e., poor quality control and high prices, outweigh their virtues, i.e., high speed and good handling. Your article on the Rickman Hyphenates was a legitimate report on a new product, but I would not depend on them being the salvation of British bikes until they offer more than marginal improvements on the originals.

Lawrence J. Little
Milwaukee, Wisconsin

GUZZI-MATIC

Imagine my disappointment when the March issue arrived with the much-awaited test of the Guzzi Automatic. I personally have test-ridden and demonstrated one of the first Thousands. Every one of the many dealers, police officers, city officials, and touring riders that rode the Guzzi were extremely enthusiastic about the total machine, without exception and regardless of brand affiliation. The only complaints we have received are a direct result of the *Cycle* test, and they are many.

Is there another machine with better brakes, a better combination of ride and handling, safety and convenience? What

23

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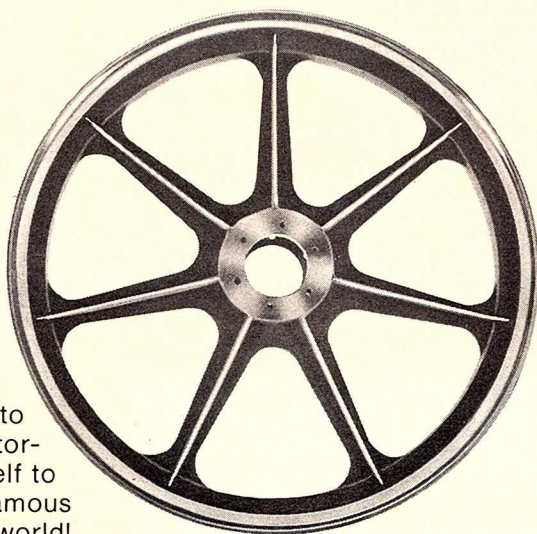
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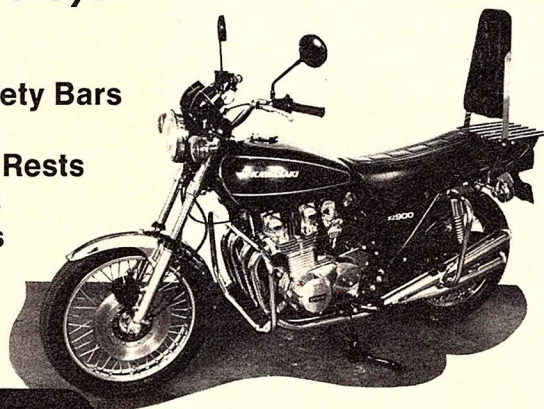
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CIRCLE NO. 63 ON READER SERVICE PAGE.

other touring motorcycle has more to offer? Good motorcycles are like good women, each interesting and attractive in an individual way.

Of course *Cycle* has a responsibility to its readers to reveal the bad with the good, but in this case it is justified to minimize great technological advances and good overall design only to expand and dwell upon doubtful shortcomings? Recognized as an important element of the motorcycle industry, *Cycle* also has a responsibility to the dealers, distributors and manufacturers who certainly don't need adverse publicity to help them recover from 1975. We have no alternative but to halt any adverse publicity for Moto Guzzi and for the motorcycle industry.

John S. Gregory
Kenosha, Wisconsin

THE BSA? DREAM

After reading Mr. Sylvester's imaginative letter in the February issue, I sat down and made a few calculations. As it turns out, a volumetric efficiency of only 110% is adequate to produce 122 bhp in a 45.7 cu. in. motor at 12,000 rpm. However, the stroke must of necessity be very small to prevent astronomical speeds from being attained. A stroke of 1.78125 in. (with normal rod geometry of 1.8-1) will accelerate the piston to 150,000 feet per second squared. This speed is not usual for a cylinder of this size, but . . . ! The piston diameter required to produce the desired displacement is, unfortunately, 5.71875 in. These dimensions result in 45.733 cu. in. or 749.8 cc. The rings would have to be near .035 in. or so to function at this speed. An intake valve diameter of 1.91 in., exhaust of 1.76 in., should be easy to squeeze into such a big chamber. Control may be more difficult; I suggest desmodromic operation in view of the spring pressure required to control a valve of this size with a lift of .600 in. at 12,000.

Because of the horsepower, a crankpin of automotive proportions (2 in. diameter) should be used.

Another advantage of a large-displacement single is torque. To gain maximum benefit from this, a wider ratio transmission can be used, producing better acceleration in the lower gears. Using a 25-in. tire, a 4.70 final drive gives a top speed of 190 mph @ 12,000. Internal ratios could be 2.58, 1.86, 1.49, 1.27, 1.12, 1.00 with an overall multiplier in first of 12.126-1. The high torque and first gear would also allow very low flywheel weight (for a single).

We at K & S are looking forward to reading more on this fantasy project, which we have code-named Super-Single.

Keep up the good work!

J. C. Diamond
Valley Stream, New York

WONDERBIKES OF THE PAST

Every month as I read your letters I note that older generation readers extol at length the virtues of motorcycles that have mostly departed from the American riding scene, such as Norton-Triumphs, Velocettes, etc. May I offer a different view-

(Continued on page 124)

The smart way for a high school senior to join the Marines.



Be quick. Act fast. Join now. We have good jobs. And a way for you to go after them, even though you're still in high school. It's our Delayed Entry Program. It means exactly what it says. A senior can sign up today,



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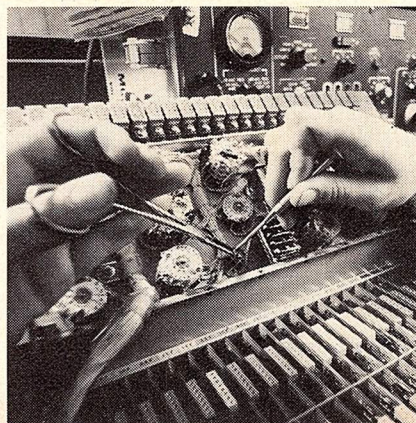
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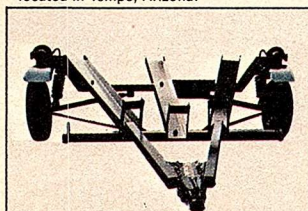
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CIRCLE NO. 43 ON READER SERVICE PAGE.



DAYTONA: ROULETTE LONG, FAST AND DEADLY

**Because of the track,
the competition and four
very special little Yamaha 750s,
this year's 200 was decided
not by who could go the
hardest for the longest,
but by who could keep from
going the longest
for the longest.**

**By Cook Neilson, Phil Schilling
and Gordon Jennings**

“W

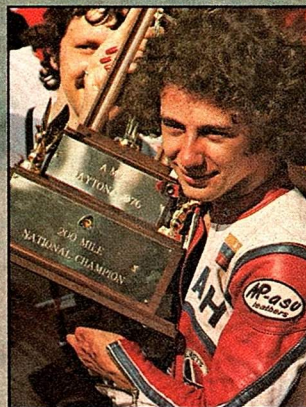
e thought there might be a little problem with tires.” —Johnny Cecotto

“I’m not interested in continuing on racing like that.” —Ken Roberts

“We decided to go for a finish. I’d ride as hard as I could without throwing ‘er

away, and Erv’d build ‘er as good as he could without blowing ‘er up.” —Gary Nixon

“I rebuilt the crank myself down in New Zealand with standard Suzuki main bearings. The pistons were used ones that came out of Newbold’s bike.” —Pat Hennen



When Roberts finally put the pressure on it was with full force, and it happened right in the middle of the race. He had been in front of Cecotto until lap 17, turned the lead over

when they both stopped for gas, and got it back on lap 21. Tightening the screws with irresistible force Ken began circulating two seconds a lap quicker than his record-setting qualifying time, and by the 30th lap had wedged seven seconds between himself and Cecotto. But by the 31st lap Roberts was riding on a doomed rear tire. He burned it down to the cords on lap 44, and it went flat just as he made his 155 mph entry to the wicked back-straight chicane. Only Ken Roberts’ very special talents kept him alive.

The bike he was riding, the track he was racing on, the people he was racing against and the people who help him all had to do with the deadly predicament Roberts found himself in as his OW-31 Yamaha fishtailed and pirouetted towards the chicane’s rigid earthen embankment. There were four OW-31s at Daytona, fielded by Venemotos (Johnny Cecotto), Yamaha Motor Canada (Steve Baker), Yamaha International (Roberts) and the Yamaha factory (Hideo Kanaya). While Ken’s team manager Pete Schick felt comfortable denying their existence two days before Speed Week was due to open, the word was already out. The OW-31s had been built to contest the 1976 Formula 750 round in Europe; when Yamaha Ltd. pulled out of racing the bikes were all dressed up with nowhere to go—except Daytona. The original asking price per bike, depending on who you talked to, ranged between \$40,000 and a sum considerably higher. How much was finally paid is not known—if in fact anything was paid at all. But even if \$40,000 was the true price, the little OW-31s were considered cheap.

For starters, they appeared to be perfect ¾-scale TZ-750s. The radiators were smaller, the expansion chambers were hydroformed for a perfect, tight fit around the engines and through the frames, and titanium and magnesium bits had been generously sprinkled. “When we got ours,” Steve Baker said, “the front fairing stay didn’t line up quite right with the nose of the fairing. So we heated it up with a torch and then said, ‘nothing’s happening.’ It was titanium.” Steve’s tuner, Bob Work, was asked if anything had been overlooked by the factory in the preparation of the little 750s. “Nothing,” Bob Work said. Splined rear axles were secured by V-shaped adjusters unlike anything ever seen before on a motorcycle; external water lines were made of special tubing and joined at special fittings; cylinders arrived from the factory pre-ported to Daytona specifications supplied by Kel Carruthers; Mono-shocks were about 4 pounds lighter than they had been last year; lower triple clamps were machined from magnesium, and an extraordinarily tough aluminum alloy had been used for the steering-head stems. Frames were different, swing arms were different, and the brake calipers were made of aluminum with titanium pistons.

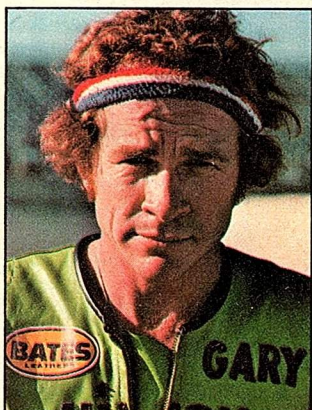
"The first time I saw mine I wanted to put it back in the crate and send it back to where it came from," Roberts said Tuesday. "Sure, it's a nice bike—much better than my last year's bike—but we didn't need it. All it was gonna do was piss people off." By the middle of the week Kanaya's OW-31 had been clocked at 180.00 mph through the finish line speed trap; Roberts' had run 182.00, and nobody doubted for a second that the speed traps were accurate. The bikes were 30 pounds lighter than everybody else's stockers, and abundantly slicker, meaner, tauter and smaller.

While Yamaha might have been accused of driving a carpet tack with a sledgehammer, Suzuki and Kawasaki projected an underkill image. The lime green Kawas were ably wrenched by Kevin Cameron, Randy Hall and Erv Kanemoto, ridden by Ron Pierce, Yvon duHamel and Gary Nixon, and surrounded all week by little problems, according to Erv, "That shouldn't have been problems at all." Fork pipes were bending under front wheel braking loads; suspension combinations had no effect on handling instabilities; pistons that had run happily on January 19th at 178 mph melted during Speed Week at 172; lots of new parts had to be tested, and most of them didn't work; and Erv's good cylinder block, the one that had produced a top speed of 178, was ruined in the first two laps of Speed Week practice.

U.S. Suzuki having officially withdrawn from racing, Suzuki Great Britain was charged with carrying the flag at Daytona. Managed by Mervin Wright, the Suzuki GB team bikes were ridden by Barry Sheene, whose knee had been wrecked last season in a racing accident and who needed a bungee cord prosthesis to help him put his foot where he wanted it; John Newbold; and John Williams. "I have heard that your bikes are very slow," Wright was asked. "Yes," said Mervin, "that's true. But mostly because the Yams have gotten so fast."

It was generally held that the OW-31 Yamahas were the trickiest bikes in Florida during Speed Week. It was also generally held that the Butler & Smith BMWs were the second-trickiest. Prepared in Norwood, New Jersey by Udo Geitl, Kenny Augustine, Todd Schuster and Tom Woods, the BMWs reflected a belief that the time had come to give the Superbike Kawasaki Z-1s a thrashing about which there could be no debate. Engines, moved forward in the chassis one inch and repositioned slightly to the right to permit clearance between the huge Michelin rear slicks and the drive shaft, bristled with horsepower—an uneasy 92 at the clutch. The 95mm Venolia pistons swung on Carillo steel rods and gave 12.2-1 compression. Inlet valves were 46mm in diameter, exhausts 39, carburetors bored out, mufflers gutted and safe engine speed set at 8800 rpm. All of which modifications were permissible under the AMA's new Superbike Production Racing rules. The only alterations made to the BMWs that raised some eyebrows were the rear suspension assemblies. For the 1975 racing season Geitl had fitted a GP BMW, the one ridden by Gary Fisher, with a Monoshock. All three team BMWs showed up with similar Monoshocks, and while Helmut Kern switched Reg Pridmore's team bike back to conventional shocks before the Friday main, Superbike Production riders were grumbling about the orange "NASCAR" machines all week.

Potent the BMWs were, and fast. Less so was the Kawasaki Z-1 prepared for Yvon duHamel by Dale-Starr Racing—and Yvon was in no great shape himself, not having recovered from a broken leg suffered last winter snowmobile racing.



PHOTOGRAPHY: DON HUNTER

PHOTOGRAPHY: JOHN ULRICH



The Expert Lightweight bash, one of the best races of the weekend, was finally settled when Roberts dispatched Pat Hennen (#40, above). Gary Nixon (left) was his usual brilliant self in the 200.

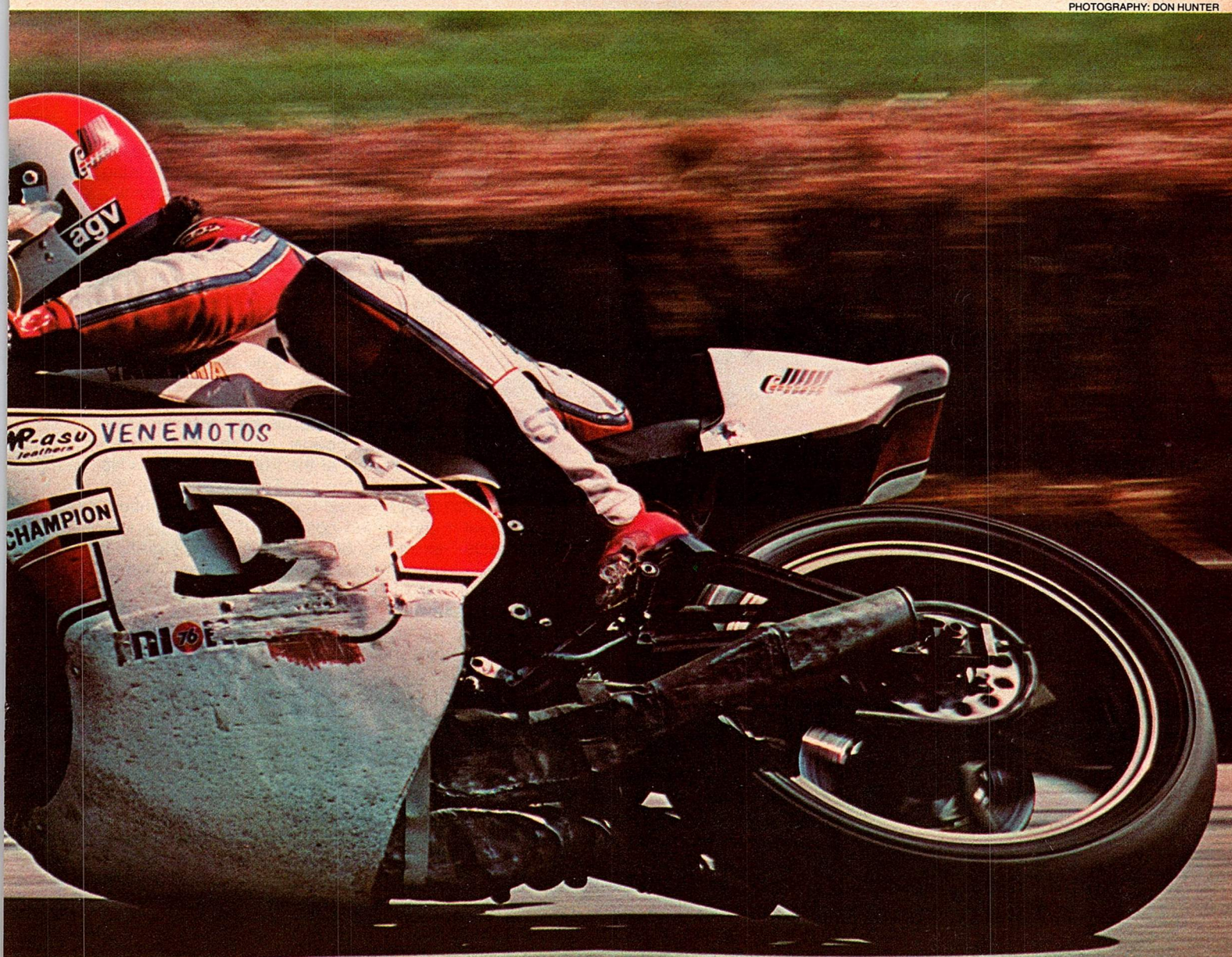


PHOTOGRAPHY: FREUD

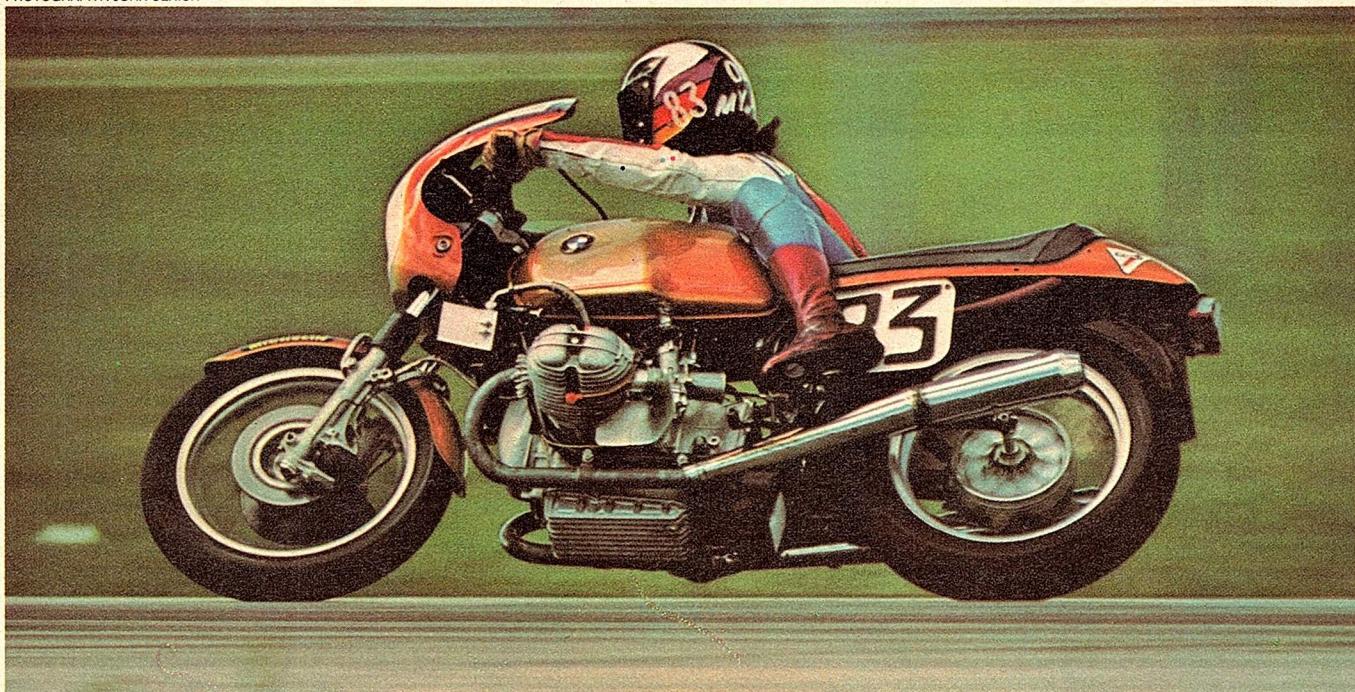


Early in the Superbike Production race Steve McLaughlin (#83), Gary Fisher (#24) and Cook Neilson (#31) were knotted together. As the race progressed Neilson fell back, Fisher fell out and Reg Pridmore joined McLaughlin for a thrilling photo-finish. Johnny Cecotto (below), hard at work in the Daytona chicane, dodged danger, went fast and collected about \$18,000.

PHOTOGRAPHY: DON HUNTER



DAYTONA



PHOTOGRAPHY: DON HUNTER

DAYTONA

tional's photo finish equipment was called upon to decide the outcome. Our King Killer Duck led off the grid and was quickly joined by Gary Fisher's BMW and, a few laps later, the BMs of McLaughlin and Pridmore. Ignoring a Monoshock that was going bad, Fisher continued to lead until more little problems developed. An exhaust clamp rotated and jammed up Gary's shifting mechanism, then he lost 3rd gear, and finally his bike shattered a rocker arm. Meanwhile Pridmore, riding the hardest on the slowest of the three BMWs, connived his way past our Duck and in a couple of laps had joined McLaughlin at the front. On the final lap Reg led through Turn 1 and into the infield, he led coming out of the infield, and he led coming out of the chicane, providing Steve with a perfect drafting opportunity. Steve took it—and nipped Reg at the finish line by three inches for one of the most exciting finishes in AMA racing history. The Ducati was third, two seconds back, Wes Cooley jammed his Yoshimura Z-1 past Mike Baldwin's Guzzi for fourth, and Baldwin was fifth. The average speed for the race was 99.8 mph.

There are still those who cling to a pine-box formula for 250cc Daytona racing: uncrate a new 250 Yamaha Monoshocker; fuel and jet it; point the thing at the race track; and settle back for some high-technology/low-perspiration racing. It never happens that way, and this year the newest Monoshockers were so slow some Yamaha tuners thought they should park the bikes and run the crates.

Early in the week the speed twins from Yamaha Motor Canada, Steve Baker and Bob Work, began tuning for speed by subtracting parts from their new 250 monoshocker. For example, the new

CYCLE



Steve McLaughlin (top) rode his Butler & Smith 1000cc BMW with speed and savvy, and got to the finish line three inches ahead of Reg Pridmore. But Gary Fisher (above, #24), shown leading Pridmore (#163), looked like the winner until mechanical gremlins nibbled away his speed.

Whether rumors were true about financial difficulties troubling Dale-Starr, the facts were that the Z-1 simply was not competitive. Trap speeds are tip-offs: fastest Production bike was the Neilson/Schilling 883cc Ducati SS (145.16 mph), followed by the Yoshimura Z-1 of Wes Cooley (144.9 mph), the BMW of Gary Fisher (144.5), the BMW of Reg Pridmore (140.18) and then Yvon's Z-1—139.08 mph.

The potent-but-tender BMWs (referred to as "Bavarian Murder Weapons" by Todd Schuster) were problematic all week; Steve McLaughlin's bike had but a lap on it when Steve gridded for Thursday's heat race. It didn't take him long to figure it out. After Fisher got a perfect start and disappeared from view, McLaughlin coupled up with Pridmore and finished third by a whisker. Our Ducati was fourth, ahead of a very special little 850cc (or more) Berliner Moto Guzzi prepared by Reno Leoni and ridden by Mike Baldwin.

The Final came Friday, and for the first time since its installation, Daytona Interna-

bike's front-end weighed seven pounds more than the front-fork assembly on the 250 Baker rode last year. Adding the AMA-mandated mufflers confused the new engine which refused to produce power, whereupon Baker and Work unplugged the 1976 unit and went back to their 1975 engine. The old engine was not as fast as it had been at Daytona '75; it still accelerated as hard, but would not pull peak revs. In sixth gear, the old engine was finished at 11,200 rpm; that meant Baker might draft faster bikes on the banking but couldn't drive past them.

At the outset, the new TZ-250 Monoshocker likewise caused heartburn in the Roberts/Carruthers camp. Even through its heat race the bike remained a stone, really forcing Carruthers to compose a different tune. The combustion chambers in the newest 250 Monoshocker have been reshaped, becoming less spherical and more conical in order to move the spark plugs farther away from the piston crowns. This change probably compensated for an increase in compression ratio, the result of lowering the exhaust port one millimeter. Chances are excellent that the transfer ports have also been slightly re-angled and re-timed.

Exactly how Carruthers managed a power recovery is uncertain, but take your pick of explanations: either he did some porting work on Roberts' new engine, or Carruthers went backwards to go forward,

and fit up last year's cylinder block. One thing is certain. Ten minutes before the start of lightweight final, he shortened the lead-in pipes to the chambers by 10 millimeters to get a higher power peak.

All this porting, trimming, shaping, adding, subtracting and exchanging became understandable when you looked at the front-row line-up for the 100-mile Lightweight International. On the pole, thanks to his fast heat race, was Ron Pierce, aboard a Kawasaki KR-250 prepared by Kevin Cameron and sponsored by Boston Cycles. Next to Pierce sat Pat Hennen on Harry Hunt's three-year-old TZ-250; then came McDonald's Team K&N Yamaha, followed by Roberts and Baker.

In its heat race, Pierce's Kawasaki ran like a rocket. It could match the best Yamahas for acceleration, and the KR-250 was faster on top. The bike was not without its problems, however; brakes and expansion chambers created most of Pierce's heat-race worries. The KR-250's front cylinder header-pipe/chamber takes a dive down the front-left side of the motorcycle, disappears under the bike and exits on the right side; the rear-cylinder exhaust comes forward on the right hand side, wraps around the front of the engine, and pokes its stinger-muffler through the left side of the fairing. The only trouble with this plumbing celebration was the header pipes, which would

break. This problem led to a virtual fish-net of safety wire beneath the KR-250 engines. The same peculiar vibration that attacked the expansion chambers had ill effects on Pierce's rear brake; the vibration and heat at the master cylinder produced a very long throw and an unpredictable feel in the rear brake lever. Moreover, the heat race revealed an ineffective front brake which had Pierce changing the front disc, pads and master cylinder.

Had the official Yamaha camps (Roberts, Baker and Kanaya) only to worry about Pierce's Kawasaki (and the similar twins of Gary Nixon and Australian Gregg Hansford) fret-marks would have been less pronounced. But at Daytona very fast private Yamahas always pop up, enough to cause a general outbreak of fret-pox. And in the fastest heat race, Pat Hennen, astride Harry Hunt's improbably-fast TZ-250, had finished second to Pierce's Kawasaki.

The Hunt-Yamaha had both impressive speed and interesting details. For some time Hunt has been the American distributor for the Italian-crafted drum brakes of Daniele Fontana; only recently has Fontana—with Hunt's encouragement—begun to build disc-brake components: magnesium calipers and master cylinders. These Italian pieces, in concert with Hunt's trick aluminum discs, literally knock off pounds of unsprung weight.

(Continued on page 86)

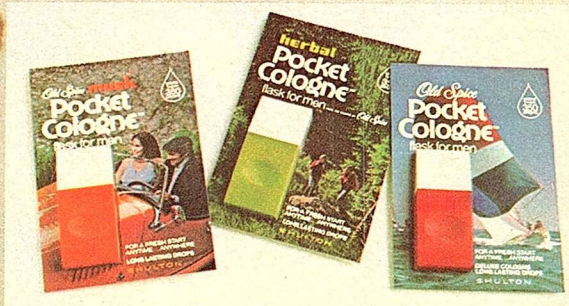
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New 3-speed automatic transmission. The well-known Turbo Hydra-matic transmission, designed and manufactured by General Motors, is now available for LUV. The T-handle selector is pedestal-mounted on the floor.



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Chevrolet does not supply all the special equipment shown on truck illustrated above. However, it is available through many Chevy dealers.

CHEVY TRUCKS

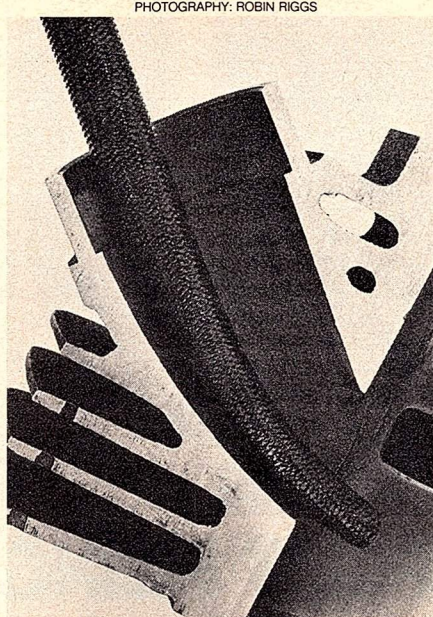
YOUR MONEY'S WORTH. MILE AFTER MILE AFTER MILE.

CIRCLE NO. 58 ON READER SERVICE PAGE.

● Until you've tried it, do-it-yourself porting looks like the kind of work that should be easy, inexpensive, and a sure-fire way to coax more horsepower out of a motorcycle's engine. That's how it looks before you start; the reality usually is nothing but frustration, expense and disappointment. First you'll find those high-speed power tools which porting work seems to require cost at least \$50, and you can plan to spend an added \$100 to acquire a two-stroke cylinder capability. Then, after making the investment, you'll discover that power-tool porting is a difficult art. And self-schooling often leads to a final expense, which is the price of a new cylinder or cylinderhead to replace the one ruined with that fancy metal working equipment.

You'll be pleased to know that there's a vastly less costly and, though laborious, much more satisfactory approach to porting. Some of us here at *Cycle* have been hacking away at various kinds of ports for years, and hard experience has taught us that distinctly superior results may be had by doing the work entirely by hand, using a special set of files. Some of the files we use are tool-maker's rifflers, which unfortunately are obtainable only on special order in many areas. But the most useful are common, coarse-tooth rat tail files, available at any hardware store. These we convert into porting tools by heating and bending their tips into the shapes you see in the accompanying photographs. We also use a "half-round" rasp (which is really more nearly sixteenth-round, but let's not argue with the file trade's nomenclature) for substantial localized widening of the port walls when that seems indicated.

Why the preference for hand files instead of power tools? It's simple: unless you do enough porting work to be really proficient you'll tend to make mistakes, and the rate at which a high-speed rotary file slashes away metal converts any misjudgment into a major



PHOTOGRAPHY: ROBIN RIGGS

disaster. Hand files are much slower—sometimes agonizingly slower—and thus provide not only good control but also a strong incentive to stop when a minimum of material has been scuffed out of a port, which is preferred practice in any case.

Slips and bobbles aside, the greatest advantage of hand files is that they tend to produce smoothly curved surfaces. Left to its own devices (as it nearly is, in an inexperienced hand) a high-speed rotary file will whack all manner of humps and hollows in a port's walls. That's a very bad thing, as a port's shape has far more influence on its air-flow characteristics than surface finish. So even if your file leaves cross-hatching all over the inside of a port, its flow will be better than through one that has been given a mirror finish over a bunch of ripples. And you can

make a filed port very smooth, satin finish, by adding the final touches with fine-tooth rifflers and emery cloth.

We must warn you that it's fairly easy to ruin a set of files in the course of modifying them for porting. Files are made of very hard, high-carbon-content steel, and will snap before bending unless they are heated dull red. The trick is to get the file's core hot enough to bend without overheating its teeth, which melts their cutting edges and leaves the file too dull to be of much use for anything. This heating is, therefore, best done with a very soft flame, and an old-fashioned plumber's blow-torch works very well. We don't have one of those, so we use an oxy-acetylene welding torch with a large tip and hold the file well away from the hottest part of the flame. Avoid hurrying the heating process, as that will make the file's surface hotter than its core—which is the part you're trying to soften for the bending operation. Finally, don't just jam the heated file between the jaws of a vise and pull, as that tends to blunt the file's heat-softened teeth. Do your bending against something softer: a layer of sheet lead wrapped over the vise jaws, or even a pair of hardwood blocks.

Both the sizes of files selected and the curves bent into them will be decided by the specifics of the ports you're trying to rework. Largish rat tail files, bent into long, gentle curves, are suited to shaping two-stroke engine's uncomplicated exhaust and intake ports, and the outer portions of the same ports in four-stroke engines. But you'll need smaller files, more tightly curved, for working around tight places like the under-valve pockets in four-strokes, and up around the tops of the transfer passages in two-stroke engines, where only the most specialized right-angle-drive power tools are effective.

The above speaks strongly in favor of hand files, as it is the tight spots that matter most. In two-stroke engines, for example,

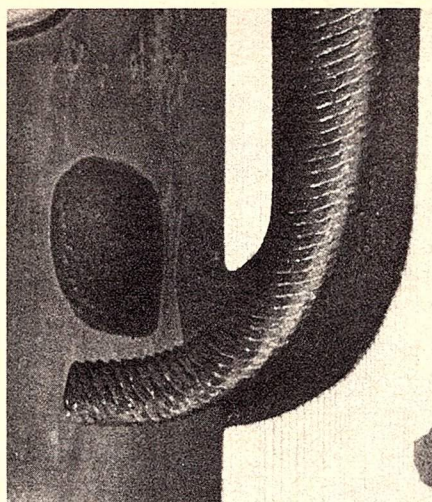


Or, how you can sharpen your bike's performance with a \$20 investment in rifflers and rasps.
By Gordon Jennings

**PORT
FILING**

even fairly bulky and cumbersome power tools work reasonably well inside the intake and exhaust ports, and at the transfer port entries. But those are not really problem areas, as thoughtful consideration of the typical two-stroke will show. Ports are streamlined shapes, turned inside-out, and streamlining becomes more important as air velocity rises. And where in a two-stroke engine does air have to move most rapidly? At the constricted windows where the transfer passages open into the cylinder, of course. Time-area/volume calculations indicate an exit velocity of at least 300 feet per second for the transfers' mixture streams, and that is easily twice their speed at the transfer passage entries. Viewed in that light, it becomes apparent that only small dividends may be expected from cleaning up the transfer tunnel entries, which is as far as most people's ambition takes them. The large improvement comes from careful attention to the removal of casting flaws and the correcting of port/cylinder window mismatches up at the tight end of the transfer passages; the hooked tip of a file is virtually the only tool capable of doing that job.

In four-stroke engines' intake ports you'll often find an obvious opportunity for improvement around the bosses cast in to support the intake valve guide. These



PORT FILING

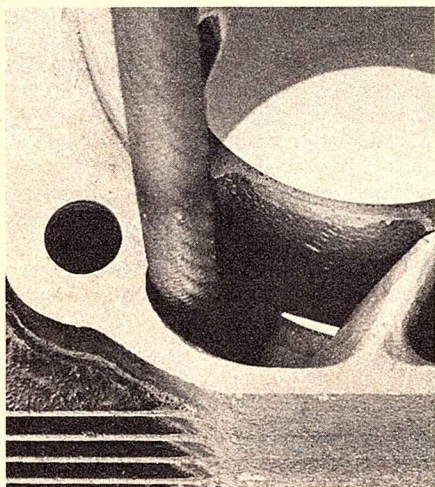
bosses almost invariably are cast thicker than necessary just to allow some latitude for casting-core shifts and other manufacturing errors. With a bit of filing, you can narrow the intake port's valve guide boss, blending its shape into that of the guide itself, and improve the air flow past that

point. Those who work with power tools, which can scoop out a lot of aluminum very fast, will be tempted to press out the intake guides and remove the bosses entirely, or to slash away everything and leave just the valve stem sticking into the port. Don't you do it: the rockers that work most valves exert a substantial side thrust on the valve stems, and the stems have to be supported against that thrust. Cut away the bosses and the guides may come loose; shorten the guides and you'll have a wear problem on your hands.

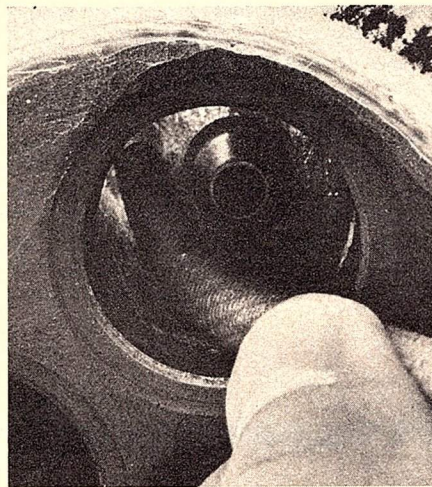
Be very careful about removing any metal from the exhaust valve guide bosses. Much of the heat pouring into the exhaust valve from the hot combustion gasses exits through the valve stem, into the guide, and from there into the surrounding metal. Remove the metal and you block the heat's escape path, which in the extreme case will overheat the guide, carbonize the oil, and cause the exhaust valve to stick open.

When you're working with a two-stroke engine, any departure from the stock port configurations can get you into a world of trouble. Remember that the ports have to be closed by the piston, and hold their dimensions to the areas swept by the piston's skirt. That is to say, just because you notice that

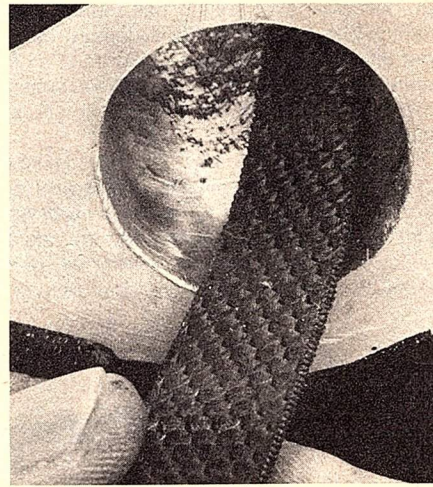
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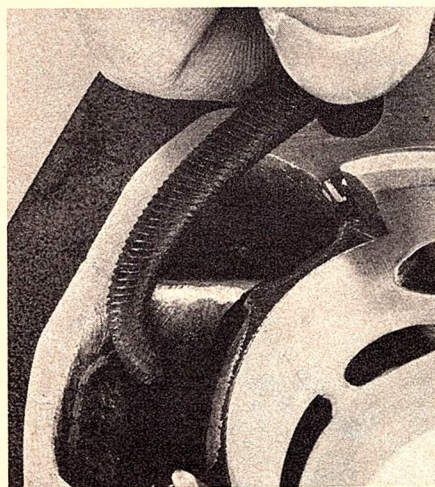
The hooked tip of a reworked rat tail file will reach the important transfer port outlet area.



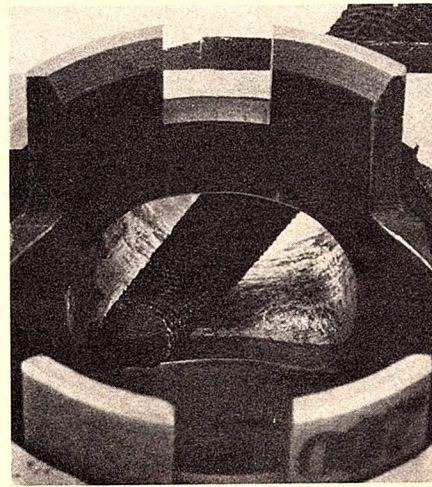
Thick cast bosses around intake valve guides are common in stock parts, and should be streamlined.



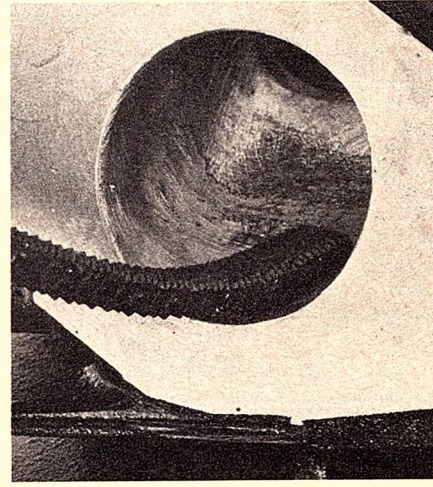
Flow-improving pockets and arches can be carved in ports with a suitably curved half-round rasp.



Hard-edged transfer port dividers can be rounded nicely with the inside surface of a hooked file.



Large-diameter, slightly curved files are a good choice for cleaning up intake and exhaust ports.

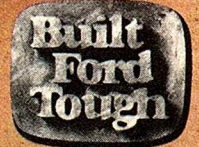
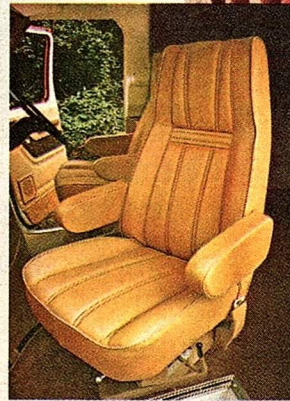
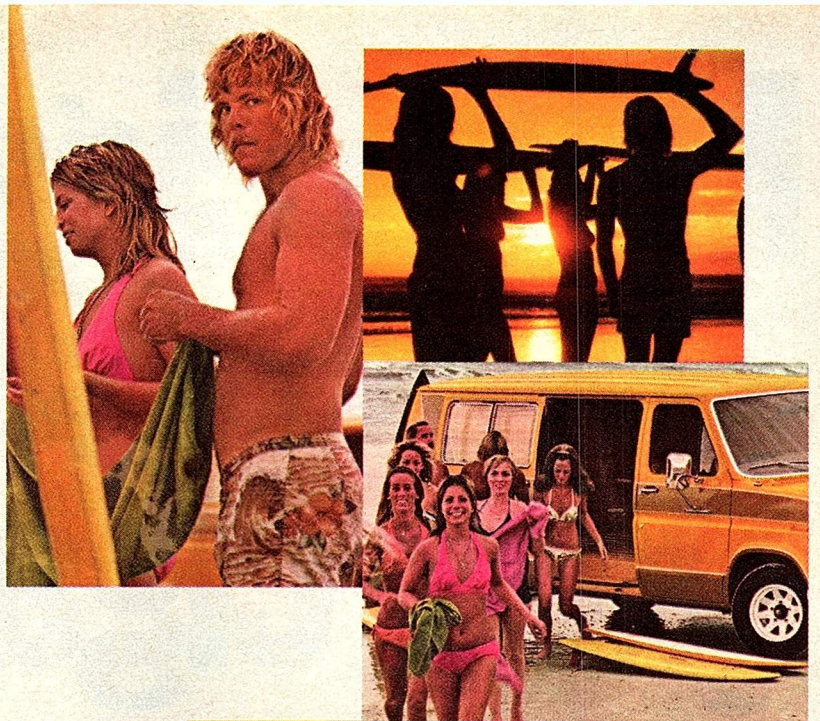


A bent, coarse-toothed rasp is being used here to round a sharply-angled intake port entry.

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CIRCLE NO. 23 ON READER SERVICE PAGE.

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1. Is your cigarette as long and as lean as our cigarette for more pleasure, more style?
2. Does your cigarette draw as easy as our cigarette for more tobacco enjoyment?
3. Does your cigarette smoke slower than a 100 mm cigarette for more smoking time?
4. Does your cigarette come in a burnished brown wrap so it looks as good as it smokes?
5. Does your cigarette sit neat in your hand like it was made for it and fit your face like it found a home?
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The first 120mm cigarette.



Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

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FILTER: 21 mg. "tar", 1.5 mg. nicotine, MENTHOL: 21 mg. "tar", 1.6 mg. nicotine,
av. per cigarette, FTC Report SEPT. '75.

● The automatic-drive motorcycle is not new, but it remains unique. It can't be said that automatic drive for bikes is not a functional concept. Rokon introduced their Salsbury drive automatic three years ago and received raves from the motorcycle press and front-echelon riders. Husqvarna has recently made available their automatic dirt racer, and Moto Guzzi and Honda have shift-free road machines. Yet far less than one percent of this country's motorcyclists have ever ridden an automatic.

Much about Rokon is unique. The factory, located in Keene, New Hampshire, is the only U.S. manufacturer of enduro, motocross and ISDT bikes. Their product is an international medley of American, European and Japanese components assembled into an unusual, if not alien-looking, machine. And the Sachs snowmobile engine, lashed up to a Salsbury belt-driven automatic clutch, with a Mikuni carburetor for going and a Honda brake for stopping, seems a bit like parts-shelf engineering.

Even a brief ride on the RT II leaves one with a less-than-jaws-of-death sensation; just get on, yank the cord, twist the throttle and go. It seems too pleasant to be effective. Real enduro bikes, after all, have recently become powerful, nimble, sudden and explosive. The Rokon hardly imparts those sensations.

In *Cycle's* April, 1973 road test of the original Rokon, the staff was awed by the overall capabilities of the bike to motor up or over any imaginable obstacle. The fact that *Cycle's* most abysmal dirt-slingers could traverse anything covered by an expert lead to the following statement: "By the mid-1970s, we feel every front line off-road bike man-

ufacturer will offer a system similar to Rokon's".

We bombed out with that prediction, and we remain puzzled as to the industry's lack of confidence in the concept. But the reasons motorcycle makers have not exactly swarmed to the automatic dirt bike concept are manifold. Tightening economies have meant lower development budgets; conventional drive systems are less costly to produce; high priority concentration on other areas (suspension, chassis, engine) has reduced the impact of auto-drive; and Rokon, while more than passably successful, has not exactly dominated off-road racing.

The new RT-340-II Automatic Enduro is fundamentally (but unofficially) a replica of Rokon's ISDT bikes used in the U.S. qualifiers and 1975 Six Day. Its riders have competed even-steven with this country's, and the world's, best, bagging 12 golds in the '75 qualifiers and two bronzes in that year's Six Day.

Everything about the Rokon is unconventional. Its appearance is stark and agricultural, but few flaws are apparent in the concept or execution of its design. The position, angle or shape of every piece has been specifically designed for function. There's no slap-together engineering in, or on, the Rokon. The welding of every joint and gusset of the stout double-cradle frame members is perfection. All the frame members are 4130 chrome moly steel, MIG welded. The steering head angle is 30°, the fork offset produces 4.75 inches of trail and the wheelbase is longish at 57 inches. Full of gas it tips the scales at 278 pounds, which doesn't make the RT II a featherweight. Saddle height is tall, to compensate for the

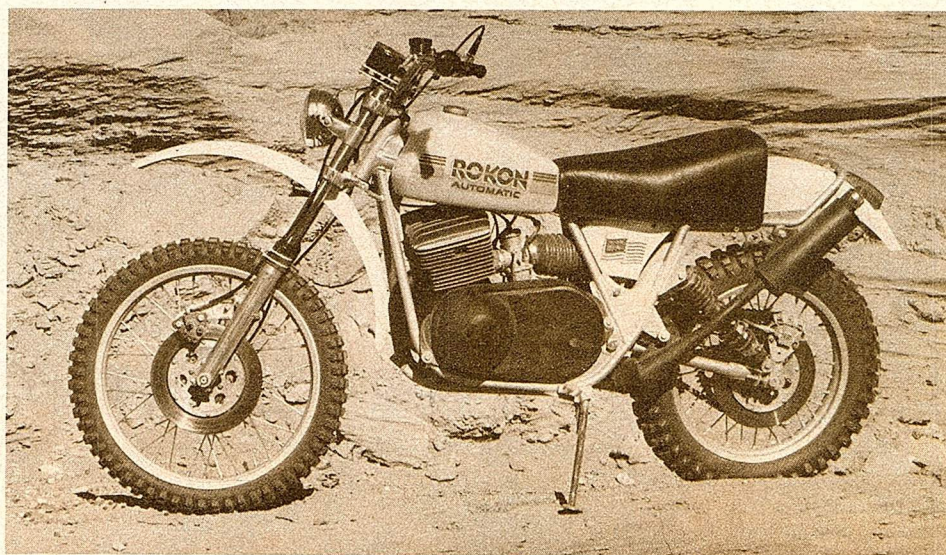
long-travel suspension, and the handlebars are intentionally left too wide to permit trimming to suit personal likes. The original bulky fiberglass gas tank has been superseded by a semi-clear ABS plastic-type. The only fiberglass that remains is the air box.

A new approach must be taken with the Rokon right from the beginning. There is no foot-operated kick crank on the Rokon. Snowmobile riders will recognize the hand-pull starter on the engine's right side; others might trace its familiarity to their Briggs & Stratton lawn mowers. To start the engine the push-pull (no reserve) petcock must be switched on, the Mikuni choke rod lifted (when cold), throttle left shut or opened just slightly, front brake lever pulled in (to prevent the bike from lunging forward when the engine starts) and the pull cord handle yanked aggressively. Generally the engine will fire in one to three pulls.

The starter mechanism is a simple set of four nylon pawls that ratchet out through eccentric movement of a cam plate and centrifugal force. The tips of the pawls then bump against the inside of the flywheel. As soon as the engine starts the pawls fall away from engagement. The engine is a common industrial-type constant-speed snowmobile Sachs motor. There's nothing trick or special about it; out of the frame it would look identical to any two-stroke single with the transmission cut away. As is common with European two-strokes, the engine has a generous number of large cooling fins.

The Bosch electrics consist of a simple points ignition and flywheel generating coil, all tucked in behind the right-side flywheel. On the left side, shielded behind the elongated GI helmet-type steel cover, is the Sals-

ROKON RT-340-II



ROKON RT-340-II

bury drive clutch and driven converter system. The crankshaft-mounted drive clutch is a basic centrifugal force torque converter. It is comprised of bob weights, springs and eccentric cams which control the graduated movement of the clutch plate. In simple terms the outside clutch plate is moved inward towards the stationary friction plate as crankshaft speeds increase. When engine speed slows, the reduction in centrifugal force allows the return springs to separate the clutch plate from the friction plate.

Engine power is carried from the Salsbury clutch through a king-size fan belt to the driven pulley. The large-diameter driven pulley is an additional clutch-type device which overdrives the Salsbury unit when it is fully closed (at maximum engine speed) and additionally compensates for shock loads to

the rear wheel. It is a V-shaped pulley, spring loaded in a closed (friction to clutch plate) position. When maximum torque from the engine is applied to the driven unit, the load spring compresses allowing the clutch plate to move away from the friction plate. As this occurs the pulley diameter at the belt becomes smaller while the drive clutch grows, thus raising (lowering numerically) the primary drive ratio and increasing wheel speed. The driven clutch will open, acting as a shock absorber, when drive or brake impulses develop at the rear wheel.

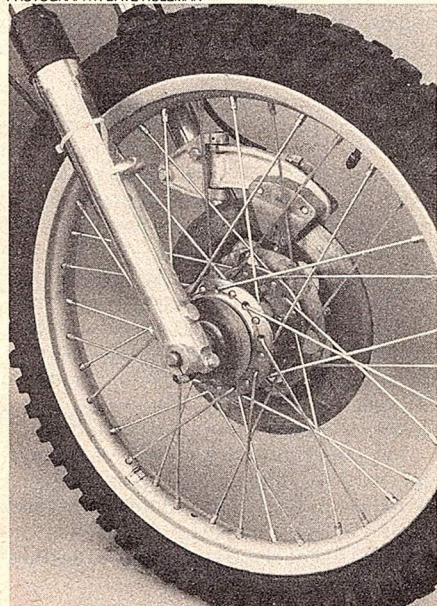
In theory, this double-clutch drive system offers an infinite gear ratio of from zero-to-one to 1:1. When the engine is at idle the Salsbury clutch is fully open, and the belt rides on a free-wheeling bushing at the hub's center. As engine speed raises and the Salsbury unit pinches in against the belt, torque is transmitted to the driven pulley and into a transfer case. Inside this small case is a HyVo-type reduction chain. The transfer

gearset reduces the primary ratio down to 1.73:1 at the countershaft sprocket. Final drive is through a # 520 Diamond chain.

The starting procedure is clumsy at best—even after it's mastered. Stronger riders can perfect starting from the saddle, while others will either stoop over the bike (for right-hand pulling) or stand to the left. The saving grace of all this awkwardness is that once running, the engine should not require re-starting unless the rider hits the kill button. The engine cannot be bogged by excessive brake application, because the belt-driven torque converter(s) automatically compensate for load forces by slipping or totally disengaging.

It is this compensation feature that prevented *Cycle* from publishing any dynamometer horsepower/torque numbers. With the RT II mounted on Webco's Schenck eddy-current dynamometer engine power is determined by torque input through the rear wheel sprocket to a given amount of

PHOTOGRAPHY: DAVE HOLEMAN



Alloy rims are without rim locks for quick tire changes. Betor fork has eight inches of travel.



Gas shocks deliver posh ride and gobs of travel. Brakes are grabby and exhaust too noisy for ISDT.

Rokon's deep involvement in the 1975 ISDT and U.S. qualifiers has produced a true Six Day replica bike. The RT-II handles better, runs faster and is more comfortable. Its automatic drive train remains unique but not bulletproof.



hydraulic restriction applied to the dyno. Engine speed is a factor in computing gear ratios with dyno rpm. None of this can be accomplished with the Rokon because the torque converter always compensates for rear wheel load. As resistance was increased by the dyno, the Rokon's drive would merely compensate for the load, regardless of engine speed, and automatically gear-down or slip.

Rokon rates power of the 335cc Sachs engine at 37 bhp (SAE) at the crankshaft. Given normal drive line power losses (eight to ten percent), and the additional energy consumed by the Salisbury unit, the RT II is probably delivering around 30 horsepower to the rear wheel. While not comparable to the explosive Penton Mint 400, Yamaha 400, Husky 360 or most other 350/Open class enduros, the RT II has an infinite power spread. Maximum power output of gear-drive bikes is acquired through gear selection, throttle opening and tire traction. With

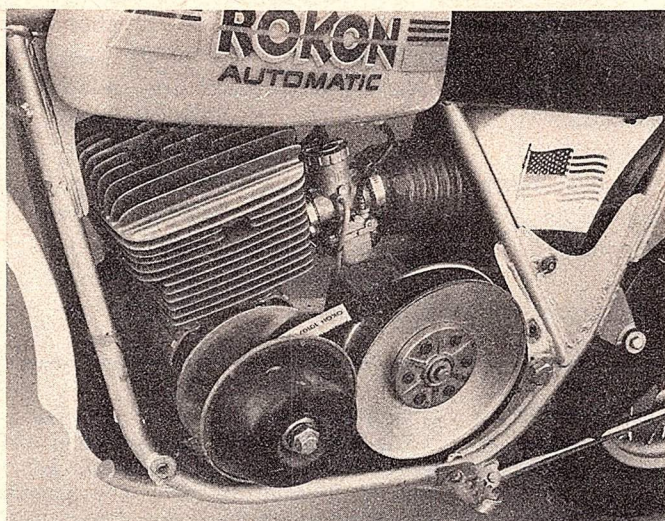
the Rokon system, only throttle position determines power produced at the rear wheel.

Riding and manipulating an automatic is the most unusual and unique experience in the off-road world. The peculiar (by gear-box-fitted motorcycle standards) power delivery of the Rokon affects every aspect of the bike—acceleration, deceleration, handling—as well as riding technique and reactions. It's extremely doubtful that the RT II would function at all well if fitted with a clutch and gear box. The entire machine—engine, chassis geometry, suspension, placement of controls—has been designed around the automatic drive.

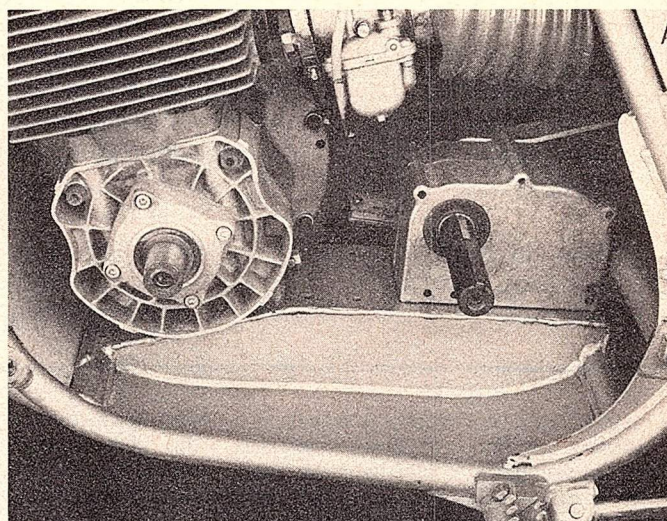
Riding the Rokon requires a new set of reflexes. We never found ourselves reaching or the non-existent clutch lever, but we often laughed about making the wrong move with the throttle or brakes. When the throttle is rolled open the engine picks up speed, the drive clutch begins its unorthodox and indefinite connection to the

drive belt and the Rokon begins accelerating. On trails where obstacles are few the engine sets itself at a constant running speed, like an outboard or snowmobile. Whoop-de-doo and turns make the drive system modulate a little, but the motor seems to keep operating at the same monotone rate.

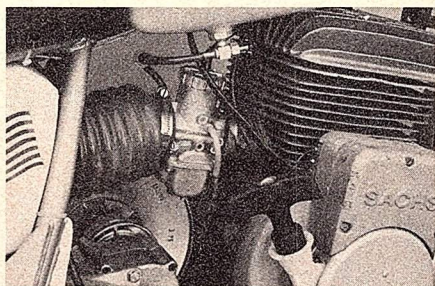
It is imperative that the rider spend a lot of time skipping over road crossings, solid obstacles and irregular whoop-de-doo sections at various speeds before riding full-tilt. The Rokon doesn't react quickly or abruptly to the throttle, which makes it difficult to loft the front wheel upon command. This is probably the biggest drawback of the Rokon Automatic on fast cross country trails. It takes a lot of practice to adjust to rolling over objects rather than dropping a gear or two, flipping open the throttle and lofting the front wheel. The RT II is a comfortable sit-down motorcycle for cross-country use. However, standing up when tanking over obstacles is



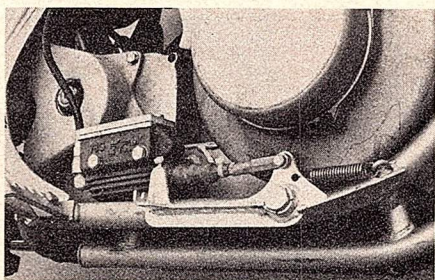
Sachs snowmobile engine mounts drive clutch on tapered shaft—no key. Driven clutch is keyed and drives transfer case. Box-type frame is rigid.



The Salisbury centrifugal clutches begin engagement at 3300 rpm on RT-II. Back of clutch cover must be open for cooling. Excess water causes slippage.

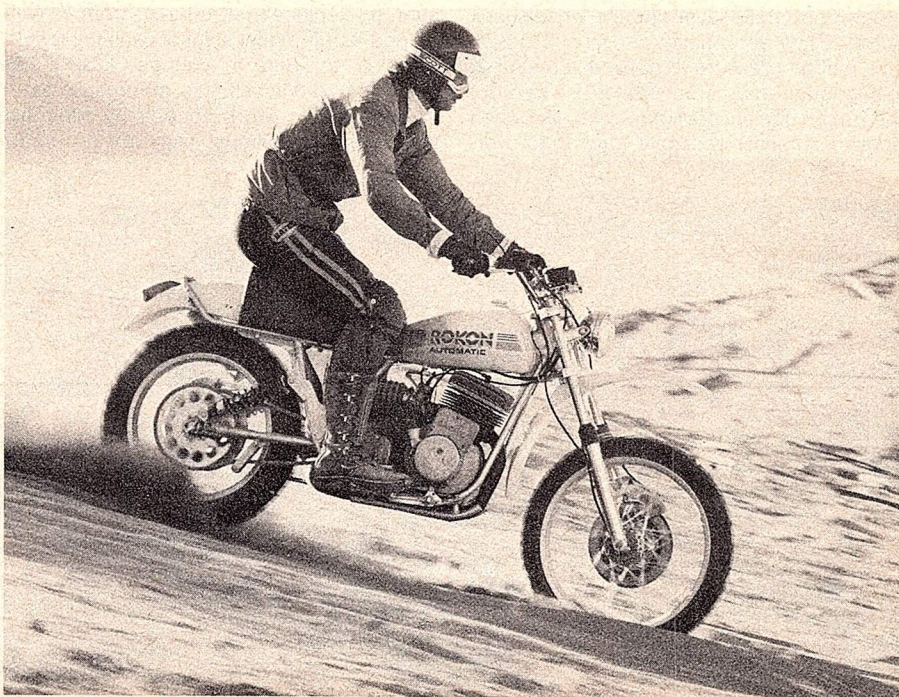


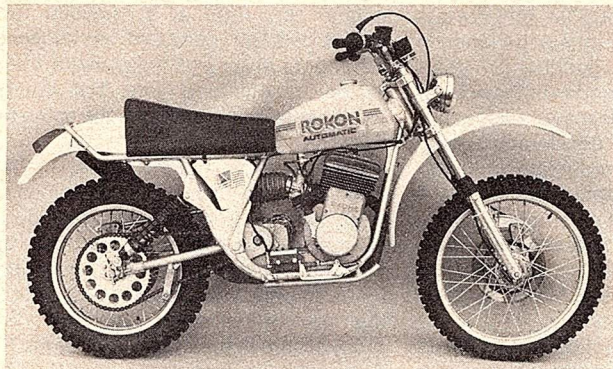
Hand-crank starting is extremely difficult. Mikuni carburetor runs clean. Engine noise is excessive.



The Kelsey-Hayes master cylinder and front pivoted brake lever are protected nicely from damage.

MAY 1976





ROKON RT-340-II

Price, suggested retail	\$1895	Air filtration	Foam, oiled
Tire, front	3.00 x 21 in. Carlisle	Ignition	Bosch points/coil
rear	4.00 x 18 in. Carlisle	Rake/Trail	30°/4.75 in.
Brake, front	11 x 1.5 in. x 2	Fuel capacity	3.0 gal. (11.4 liters)
	(279 x 38mm x 2)	Electrical power	Bosch 40 watt Flywheel Magneto
rear	11 x 1.5 in. x 2	Primary transmission	Centrifugal clutches,
	(279 x 38mm x 2)		variable ratio with 1.73:1 Transfer Case
Brake swept area	178.96 sq. in. (1163 sq. cm)	Secondary transmission ...	# 520 Diamond Chain 4.15:1
Specific brake loading	2.68 lb./sq. in.	Wheelbase	57 in. (144.8cm)
Engine type	Two-stroke, piston port	Seat height	34.5 in. (87.6cm)
Bore and stroke	78 x 70mm	Ground clearance	11.5 in. (29.2cm)
	(3.07 x 2.76 in.)	Curb weight	278 lbs. (126kg)
Piston displacement	335cc (20.4 cu. in.)	Instruments	VDO Speedometer w/reset tripmeter,
Compression ratio	11.8:1		route chart holder, watch holder
Carburetion	36mm; Mikuni	Average fuel consumption	22 to 30 mpg

a must to keep your kidneys shaped.

Rokon's use of disc brakes is innovative. Their advantages are minimal heat fade, limited slippage when wet and design simplicity allowing for quick-change wheel assemblies. But they, like other aspects of the Rokon, demand rider adjustment and time. Mash down on the foot pedal or grab too much front brake lever and the wheels lock solidly. They don't have an evenly progressive feel as pressure is applied. Compared with good off-road drum brakes (i.e. Penton) the Rokon binders are light-switch-like when applied. A relatively simple solution to over-

braking was discovered by the ISDT riders, who bled air *into* the brake systems. This eliminates their on-off action by giving the fluid a pneumatic cushion.

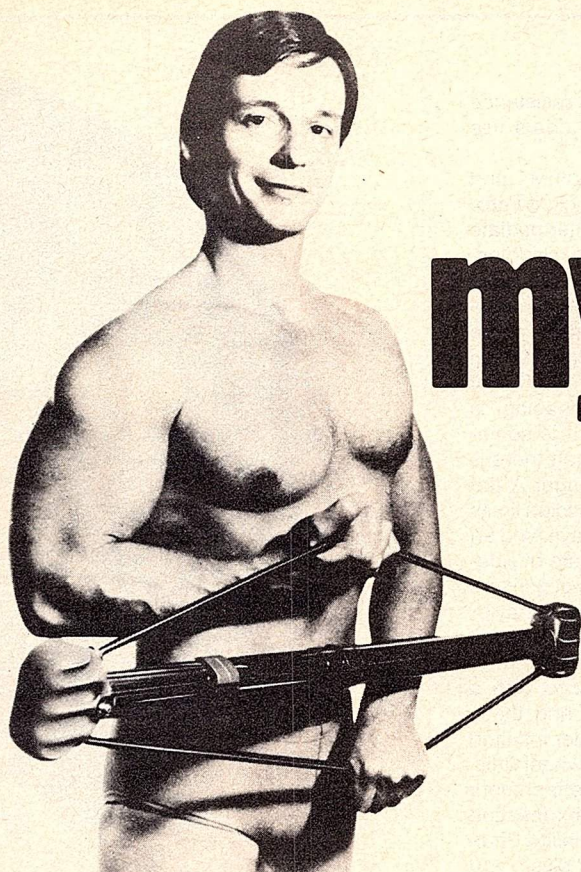
For fast cross-country use the Rokon's suspension needs stiffening. The eight-inch travel Betor fork springs are too soft, and collapse before the first tank of gas is consumed. Replacement springs from Rokon helped, but the best solution was full-length S&W 22- to 28-lb./in. springs (# SP 2228-20). The Red Wing shocks, mounted in a lay-down position, work acceptably for most non-racing conditions. They are too softly

sprung for high-speed cross country riding.

The Rokon is heavy, but it's doubtful that ten or even 15 pounds less weight would alter its off-road manners. The 57-inch wheelbase makes the Rokon a slow-steering bike. This again was probably designed in to compensate for the front wheel spending most of its time on the ground. Naturally there's no gearshift lever to bend, and the rear brake foot pedal is mounted with its pivot point forward to virtually eliminate the possibility of damage by a log or rock.

The saddle is thick and comfy, and ad-
(Continued on page 107)





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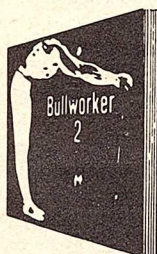
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● Ride motorcycles long enough and you're going to learn what it is to be afoot, walking along with one of your bike's wheels in hand, hoping to find a service station, and working up a big load of hostility toward the idiot who dropped a roofing nail in the road. There you'll be among the bootless and unhorsed, brought low by a simple puncture. You won't like it, and at such times most riders will begin to wonder why motorcycles can't have solid rubber tires? Maybe they wouldn't help a bike's ride quality as much as the inflatable kind; solid tires would at least be puncture-proof.

Be advised that generations of inventors have suffered the same inconvenience, had the same thought, and have tried very hard to devise a workable substitute for John Dunlop's pneumatic tire. Some highly ingenious alternatives have been concocted, with no result beyond creating amusing work for patent attorneys. It's fairly easy to make a puncture-proof tire: a solid rubber hoop has that property. Reasonably good cushioning has been obtained with filler materials ranging from steel springs to foam rubber. But we're still living with the pneumatic tire's vulnerability and its near-magnetic attraction for pointed objects, because it alone generates useful levels of the force called "self-aligning torque," which provides virtually all of a motorcycle's stability and steering feedback.

When road-surface irregularities deflect your bike's front wheel from its normal, straight-ahead position, self-aligning torque is what pulls it back. There is enough flexibility in the tire's carcass to let the tread contact patch squirm into alignment with the bike's line of travel even when the wheel itself is aimed slightly to the side. However, the tire is not so flexible that it will allow the tread-squirming without resistance, which is the source of self-aligning torque. Flexibility is what allows the tread to squirm into compliance with a bike's overall direction along the road; the tire's resistance to flexing is what pulls the wheels into alignment, and is the strongest of the motorcycle's stabilizing forces.

Those whose riding styles involve vigorous hauling at the handlebars should be familiar with steering feedback. When a bike is footpeg-down on the left and you have to wrestle it up, over, and into the same attitude turning right, the transition is made by levering the bike's front wheel hard-left. Yes, you steer left to turn right, forcing the front wheel into the direction of lean to first heave the bike upright, then flop it down on its right footpeg (checking the tilt with a bit of counterpressure to the right in the final moment of the maneuver). Steering inputs of this sort ask much of the front tire's grip on the road, and you'd never get away with it but for self-aligning torque, which is reflected as a kind of elastic resistance to handlebar movement. The effort required to pull in more steering angle rises with tire loading—up to a point, beyond which there is a simultaneous

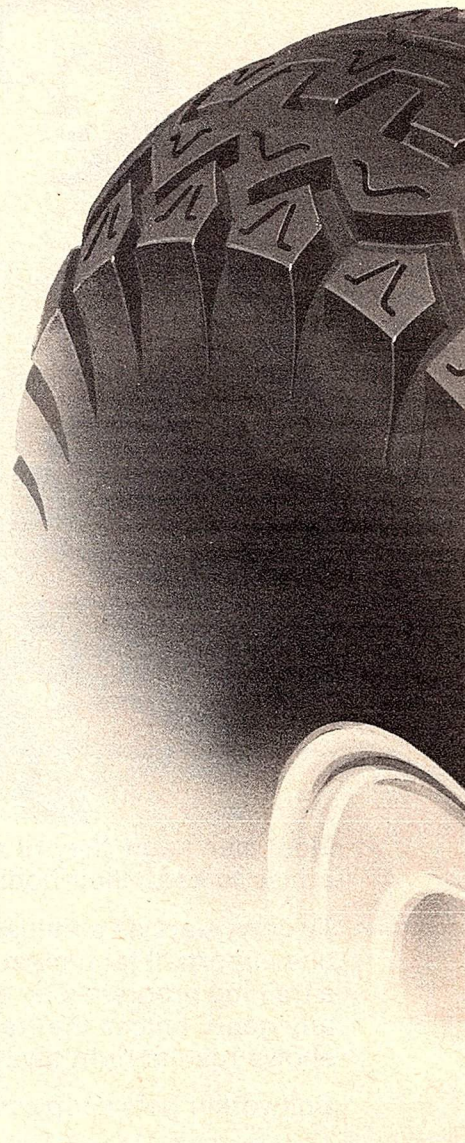
(and drastic) decline in steering resistance and tire adhesion. Experienced riders use the first to judge the second.

Tires' flexing produces another and equally important form of feedback: it introduces a broad, perceptible intermediate condition between tracking and skidding. When there's a side-load on a tire its tread distorts, easing sideways as it comes down to contact the road, and the net effect of the distortions is to make the tire and wheel crawl away from the load. The degree of departure from the nominal heading is called "slip-angle," and the term is somewhat misleading, as it occurs when there is no actual tread/pavement slippage. A tire carrying a side-load within its adhesion limits doesn't slip; it just shuffles sideways, and an experienced rider—sensing the rate of side-shuffle (with both tactile and visual sensors working)—uses this aspect of tires' behavior to judge how closely he's crowding the limit of tire adhesion.

Each tire's beads are reinforced with a multistrand hoop of steel wire, and these keep the tire from expanding under inflation pressure and popping over the wheel rims. The bead wires also serve as an attachment point for the cords, which prevent inflation expansion and control tire flexibility. Individual layers of cord are called "plys," and you'll find at least two in all tires. But the number of layers is insignificant compared with the influence exerted by cord angle. Most tires have their cords reaching across at an angle approximately 35–40 degrees from the plane of their beads. Cords looped straight across 90-degrees from the beads give the softest, most flexible carcass; zero-angle cords the greatest stiffness. Tire makers juggle cord angles to get a compromised balance between ride, feel, impact resistance and cornering power. The angling and disposition of cord layers also establishes the low-profile tire's ellipsoid shape.

Tire-rubber compounding is another thing you can't see, but is vitally important, and usually compromised. In tires made for pavement, the grip is improved by using a soft compound with lots of hysteresis, or internal friction. Soft rubber envelops the road's surface texture, forming what amounts to a mechanical lock. Hysteresis keeps the tread from losing that lock by damping vibrations set up in the tire as the tread blocks slap against the road. Unfortunately, soft rubber wears away rapidly and the friction produced by hysteresis causes the tire to get hot—and the tread even softer. A hard compound wears less rapidly and is somewhat less likely to come apart due to overheating, but its grip on the road—especially in the wet—can make it a false economy. Ambulance rides and plaster are very expensive.

A tire's tread pattern is highly visible, and there's more to it than meets the eye. Recent road racing experience has demonstrated that a soft-compound slick is best on clean,



HOW THINGS WORK TIRES

With all its faults, the pneumatic tire continues to be the indispensable element in keeping motorcycles and their riders up on two wheels and moving down the road.

By Gordon Jennings

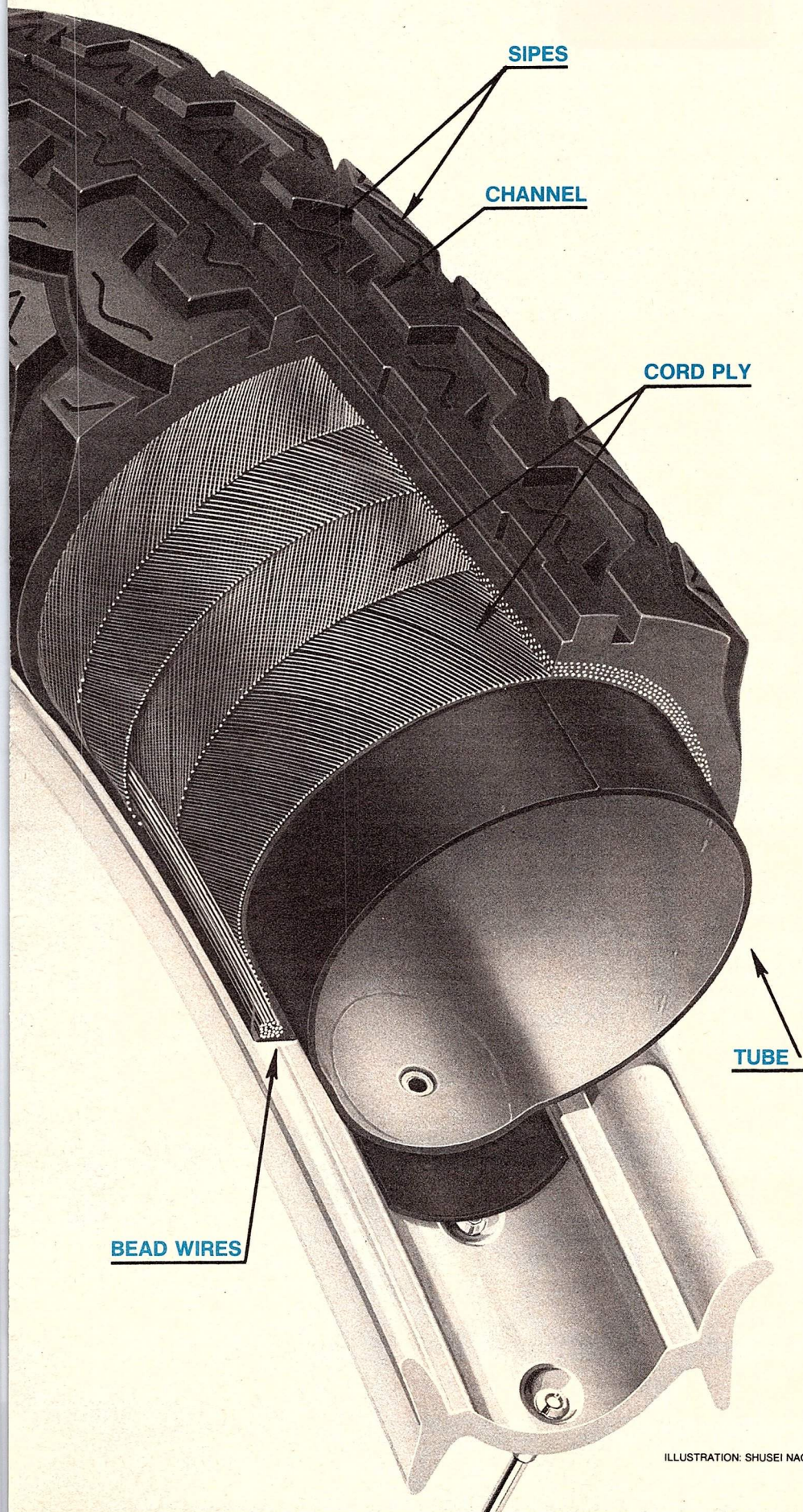


ILLUSTRATION: SHUSEI NAGAOKA

dry pavement; the real world is full of oil, sand and rain drops, which require that a tire's tread have channels and cutting edges. The grooves between tread blocks are channels, and give water an easy escape route away from the contact patch. And the fact that the tire surface is carved up into blocks and ridges creates edges that will bite through a film of water (or sand, etc.) on the road. The thin, curved cuts known as "sipes" provide additional pressure edges on the tread. Road tires' tread patterns are arranged to present pressure edges mostly across the presumed direction of tractive load: those in the middle of the tread placed across the tire, to take driving and braking forces; those farther around on the side of the tire essentially circumferential, to cope with cornering. These treads seldom are divided into individual blocks, because a single, free-standing block bends too easily and will make the tire shuffle in response to loads in any plane. Instead, road tires have a tread that is essentially a collection of unbroken zig-zag ridges, which have much greater broadness than depth at most points around the tire.

Off-road tires knobs are tall and narrow, without connecting webs, and that's what makes the knobby so ill-behaved on hard surfaces. The individual knobs wobble, and that can become a wobbling of the whole motorcycle. But the knobby digs in and gets a grip in the soft stuff. All it needs is enough space between knobs to keep it from loading with clay and turning into a slick, and a tread compounded of rubber tough enough to keep the knobs from being torn away. The final special requirement of off-road tires is a very stiff carcass, which gives the tire sidewalls the strength to resist damage due to head-on impacts against logs and rocks. If the carcass is too limber, an impact can drive the tread right back against the wheel, rupturing the cord inside the tire, pinching the inner-tube, denting the rim, or all three.

The off-road tire's problems are compounded by low inflation pressures. To get traction, which requires a broad contact patch, riders will inflate knobbies to only 12-14 psi, and rely on rim locks to keep the tire from turning inside the wheel and thus tearing out the tube's valve stem. The low pressures aren't good for the tire; they do improve traction. Road riders inflict even worse damage on their bike's tires by failing to adjust inflation pressures to compensate for overloads and sustained high speeds. Tires flex more when they're heavily loaded, and that makes them overheat. High speeds flex any given spot on the tread with greater frequency, which also causes overheating. Put the two together and you've got a tire hot enough to pop a seam—and that really can happen. Those who don't want it happening to their bike should take note of what the owners manual says on the subject of loads, speeds and inflation pressures. You can do a lot to a tire; keeping it correctly inflated is about all you can do on its behalf.

● Oil leaks were once thought to be an integral part of motorcycling, but no more; today that kind of messiness is sufficient to spoil an otherwise excellent machine. So when the Gentleman's Express Honda (see *Cycle*, November, 1975) began to weep oil around its cylinderhead gasket after a couple of weeks in service, this modified CB-500 was returned to our shop and tidiness restored.

Any engine improperly assembled will leak oil. And engines that have been modified to increase power are more prone to leak than stockers. The additional heat and pressure which accompany power increases tend to push oil past ordinary gasket sealing compounds, especially if the engine has been sloppily assembled. Careless assembly extends from major disasters (for example, mis-shimming a gearbox) down to simple things, such as poor gasket mating.

As a first step, the top cover and cylinderhead were removed according to the steps in the Honda Service Manual. The

cylinderhead nuts weren't as tight as the torque specifications required, but the nuts weren't loose enough to be the primary cause of the leak. Neither the cylinderhead nor cylinder gasket surfaces were warped more than .003-inch. But both of these surfaces were wet with oil. A commonly available sealer spray had been applied to the gasket during assembly, but the sealer had simply vanished.

There were some hardened splashes of it on the aluminum surfaces, but not a trace on the gasket.

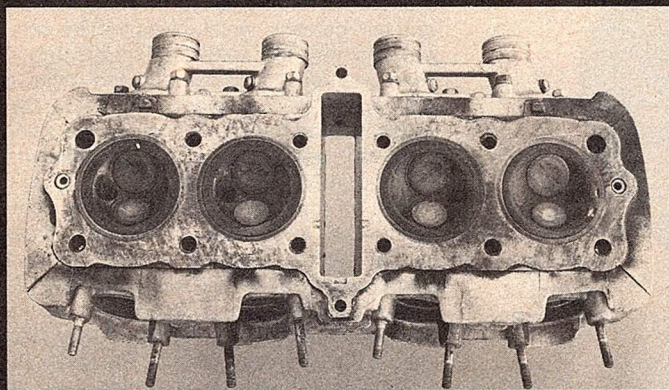
After the carbon ridges on the head and cylinder were carefully scraped clean with a dull pocket knife, all the oil was washed off with cleaning solvent. While the parts were in the solvent tank, the gasket surfaces were brushed briskly with a 3M Scouring Pad. These marvelous pads are available in three grades in hardware and grocery stores. The medium grade (color-coded green) works best on gasket surfaces. The pad dulls the shiny aluminum gasket surfaces and gives any sealer a better surface to cling to. The very best gasket surface is obtained by shot-blasting the sealing surfaces lightly with glass beads. However, this process can only be used when the components are completely disassembled. Furthermore, the blasted parts must be washed in warm soapy water to remove all traces of the extremely gritty glass particles. An
(Continued on page 74)

HONDA FOUR HEAD GASKET FIX

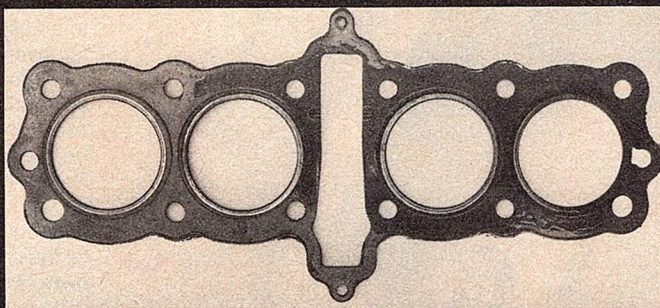
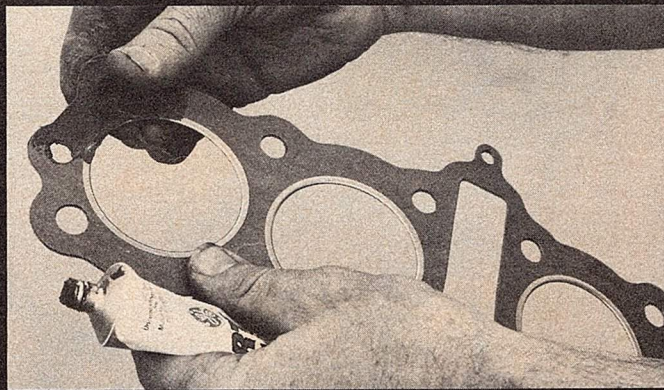


An effective gasket and sealer system must be mechanically and chemically compatible with the mating parts as well as the fluids and gases it must retain or exclude. Careful selection of the sealer and surface preparation are crucial.

By Jess Thomas



The head as it was removed shows that neither the gasket nor the sealer used adhered to the aluminum. There was a film of oil covering the head, both sides of the gasket, and the cylinder.

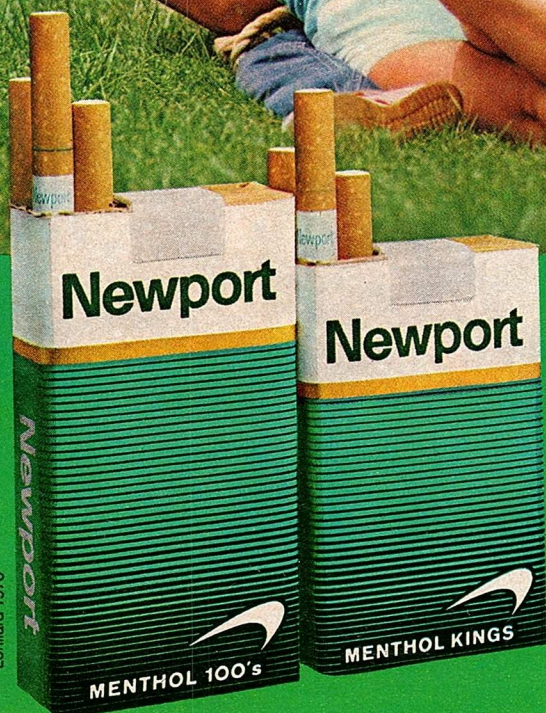


The worst leak was in the area where the o-ring hole was broken through to the metal ring. When the parts are ready for assembly, both sides of the gasket are coated with the silicone seal.

PHOTOGRAPHY: PAUL R. HALESWORTH

Newport

Alive with pleasure!



*After all, if smoking isn't
a pleasure, why bother?*

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

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Kings: 18 mg. "tar", 1.2 mg. nicotine; 100's: 19 mg. "tar",
1.3 mg. nicotine av. per cigarette, FTC Report Nov. 1975.

THEY CALLED THEM FIRE ENGINES. It was a fitting nickname for those Italian multis which dominated 500cc Grand Prix racing in the 1950s: the war machines from Gilera, Moto Guzzi and MV Agusta howled like fire engines above the heavy, round monotones of big British singles. Before they were finished, the Italians managed to cut 500 cubic centimeters into fours, sixes and eights, but this grand extravagance ended in 1957. All the factories retired. Except one.

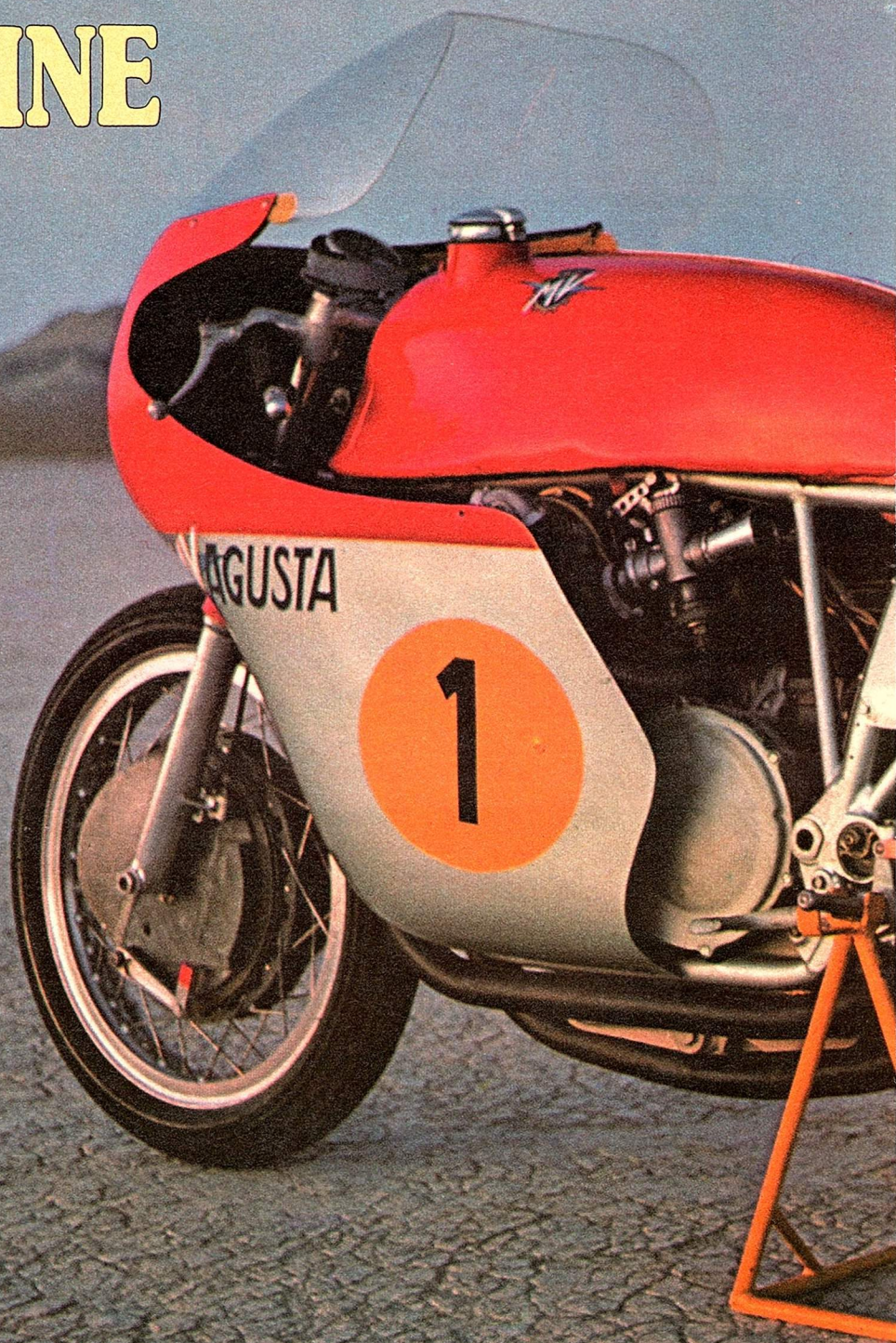
MV Agusta refused to garage their 500 four-cylinder racer. It had won its first grand prix race in 1952, and would score its last in 1966. During that period the 500 MV carried three riders—John Surtees, Gary Hocking and Mike Hailwood—to nine world championships, winning in 1956, 1958, 1959, 1960, 1961, 1962, 1963, 1964 and 1965. The 500 fire engine created the MV legend.

In 1950 MV Agusta had an obscure name in motorcycling; indeed, the company man-

ufactured helicopters and dabbled in motorcycles. But Count Domenico Agusta, head of Meccanica Verghera Agusta and patriarch of its racing effort, knew what he wanted: a 500cc world championship racer. He hired Pietro Remor, who had engineered the successful Gilera four-cylinder racers, to design an updated version for MV. Remor fulfilled his commission, but the result had few qualifications as a racer and none whatever as a world-beater.

In broad outlines the engine seemed po-

FIRE ENGINE



tent: a transverse, air-cooled four-cylinder 500 with gear-driven double-overhead-camshafts. There the good news stopped. Two small carburetors fed four 54mm x 54mm cylinders; a highly unorthodox transmission mated to a rear-wheel drive-shaft; a parallelogram swing arm (sprung by a torsion bar and damped by a pair of friction scissors) carried the rear wheel; and a girder fork provided front-end suspension.

Despite Pietro Remor's efforts, the innovative bike was conspicuous by its failure.

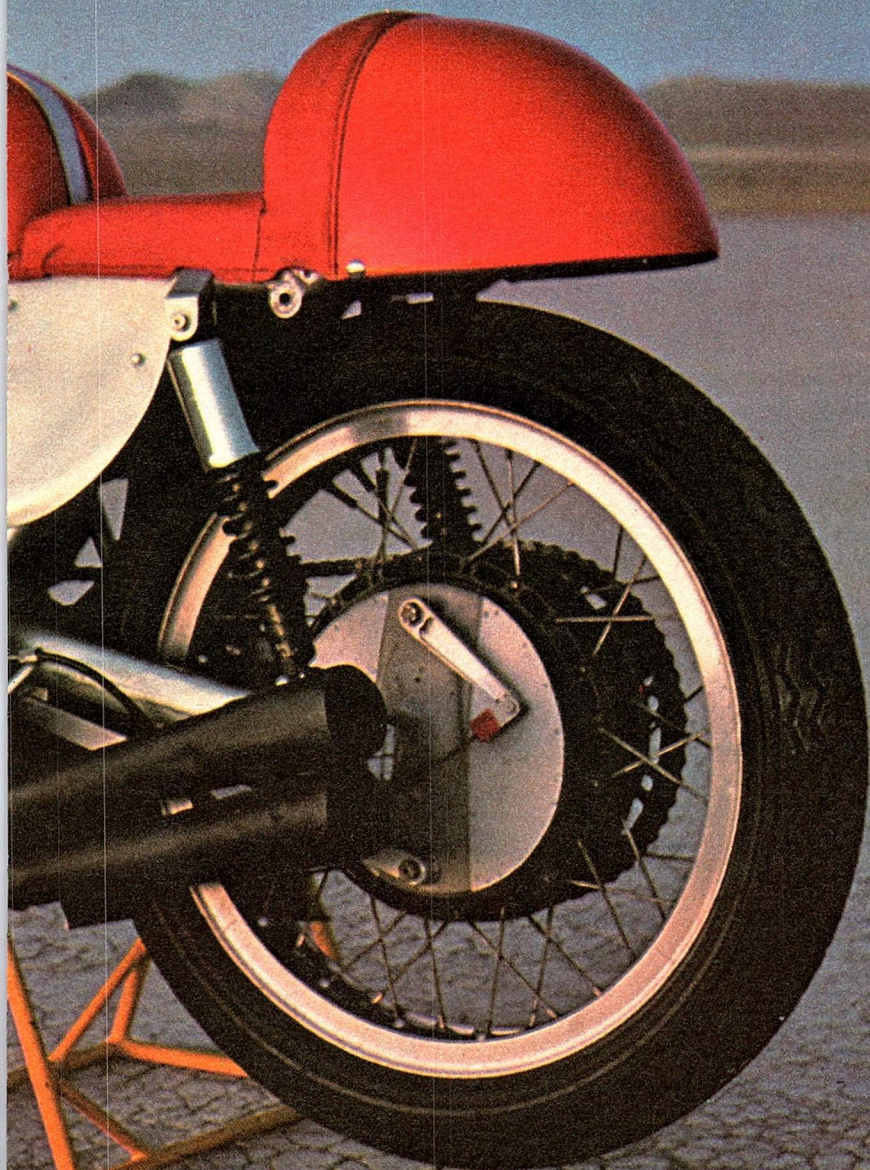
A proud and resourceful man, Count Agusta could not—and would not—tolerate a loser. So MV hired Englishman Les Graham, who had won the 500 world championship in 1949 aboard an AJS, and the struggle to make the MV a proper racer began.

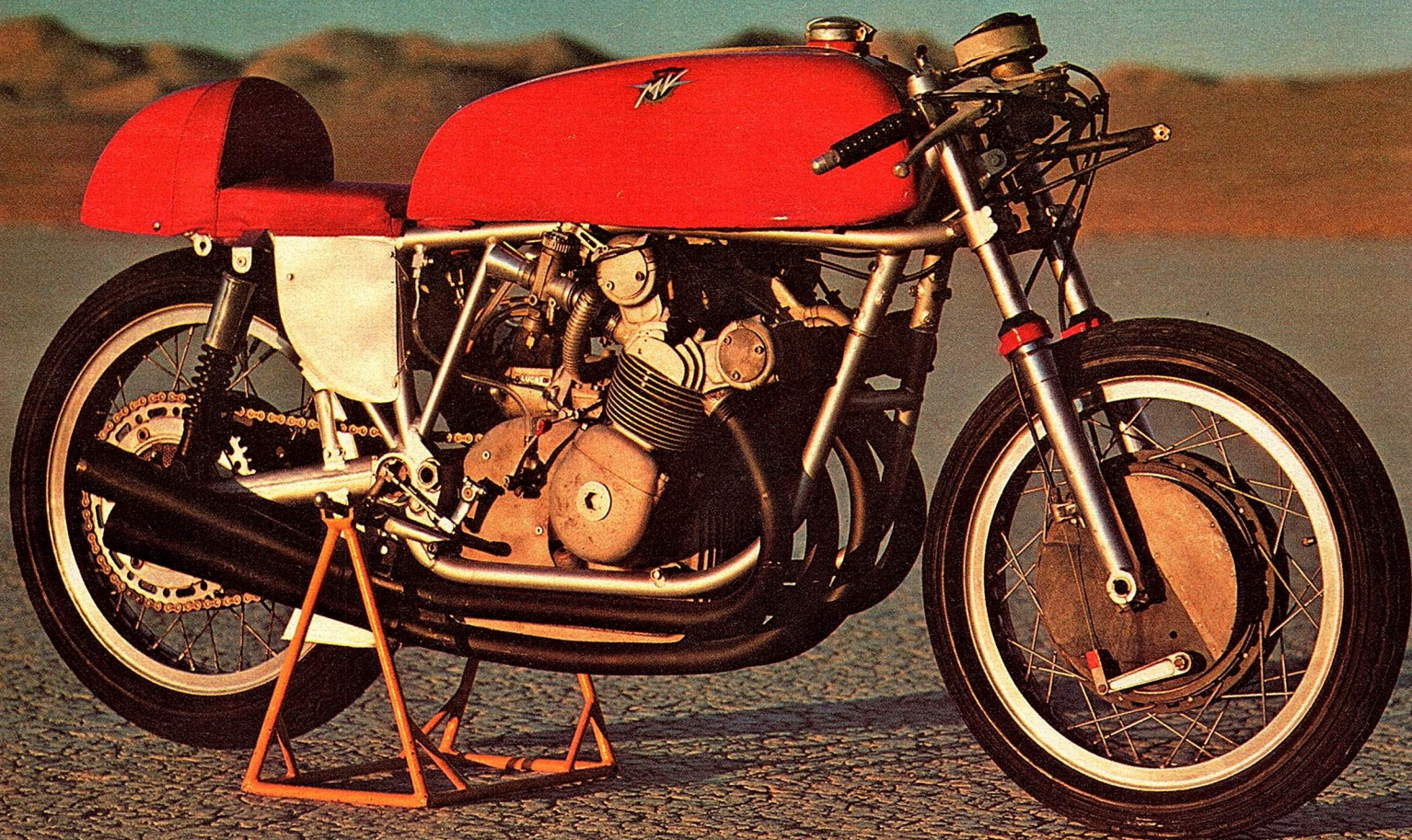
Not only was Graham a first-class rider, he was also an excellent development rider. He could identify a problem, separate it from different but related difficulties, propose a solution, predict its result, get the change made, determine its effect on the

motorcycle, and—finally—distinguish between progress and wishful thinking.

Graham gave the MV project momentum as the motorcycle underwent drastic changes. In his first year (1951) the engine began wearing four carburetors and a pair of megaphones; a hydraulically-damped telescopic front fork appeared; and at the back the torsion-bar spring and friction dampers disappeared, replaced by conventional shock absorbers. The parallelogram rear swing arm and the driveshaft re-

By Phil Schilling





“...with six speeds
and 72-74 horsepower,
the 165 mph motorcycle
could deal with
all comers in 1965...”

maintained. But not for long.

In 1952 MV re-designed the original Remor engine and output went up to 57–60 horsepower at 10,500 rpm. The bore and stroke dimensions became 53mm x 56.4mm; the primary gear drove off the crankshaft between the first and second cylinders; an orthodox five-speed transmission went inside new crankcases; a Lucas racing magneto, located below the gallery of four carburetors, sparked the engine; and a chain replaced the shaft as the final drive. MV likewise reworked the frame. Double down-tubes formed an engine-bay cradle, and the tubes which rose behind the motor first anchored the swing-arm pivot-pin and then provided the upper mounts for standard Girling shocks. The MV fire engine had assumed its permanent shape.

Graham, a proponent of the Earles-type pivoted front fork, had experimented with this system almost from the time he arrived at MV, and in 1952 the Earles-fork MV became a familiar sight. Other MV factory riders never shared Graham's enthusiasm for the fork and its weird geometry, preferring instead the standard telescopic units.

Strange fork or not, Graham got results, the kind Domenico Agusta wanted. After showing some promise through 1952, the Englishman notched outright wins in the season curtain-closers, the Italian and Spanish Grands Prix. Although Umberto Masetti and Gilera won the 500 World Championship in 1952, MV's fire engine had erased the Gilera's superiority.

The promise of '52 turned into the disaster of '53. First, Geoff Duke—acknowledged as the best road racer of his era—left the Norton team and joined Gilera. For two years Graham had been trying to catch up with Gilera development, and if Graham had near or equal equipment, he could deal with the likes of Masetti. But Duke was another matter. To whip him, Graham needed an MV which was substantially better than the Gilera, and a lot better than the 1953 MV.

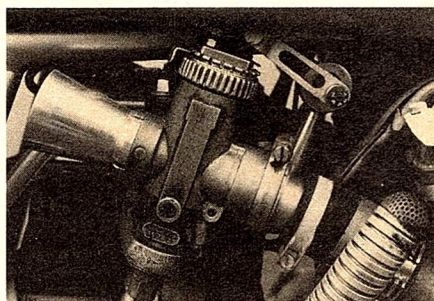
Les Graham died trying at the Isle of Man. The day after winning the 125cc TT on a little MV single, Graham was lying second to Duke when his Earles-fork MV 500 went out of control at 140 mph on the Bray Hill descent. The MV development program stopped with a grinding crash at the bottom of the hill.

For two years MV searched for a rider who could cope with Geoff Duke and the Gilera. MV found him in 1956; his name was John Surtees. This young British racer, an ex-Norton teamster and a ferocious competitor, would be matched against Duke, the supreme master. But for all the hoopla, the titanic struggle didn't last a season. Duke led a riders' strike at the Dutch Grand Prix in 1956 and the FIM suspended him for his union activities. Surtees collected the 500 World Championship. MV's fire engine had become a winner at last, though it won without repelling Duke.

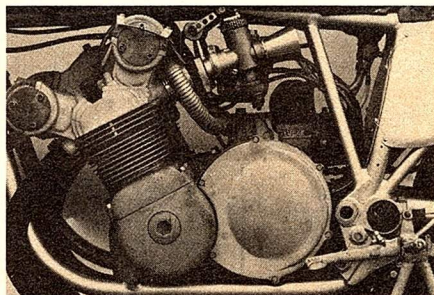
Surtees raced with everything he had, body included. He was the first racer to try hanging off to the inside when arcing a bike

through corners, a technique which kept the wide MV from grounding and allowed Surtees to apply more power through the corner. Twenty years later, there would be a dozen variants of the Surtees' style, though Surtees' contemporaries found the hanging-off business rather tatty. This untidiness, according to style-book partisans, contrasted poorly with Geoff Duke's impeccable (he was *always* impeccable) form where man and machine united in perfect harmony, and arms and legs stayed out of the airstream. While Duke's body never made an awkward movement, Surtees worked and sweated—and his body English showed it.

Surtees used his head too. Like Les Graham, John Surtees was a technician who could continue to develop the 500 MV. The Englishman had real clout around the race shop. Not only was he an ace, he was a foreign star, and an English one at that.



FIRE ENGINE



PHOTOGRAPHY: MICHAEL GOING

Foreign riders, especially English stars, awed the Italians: *il grande pilota inglese* knew! Italian riders knew racing motorcycles too, but they often had to haggle and negotiate to get changes. Surtees got instant cooperation. An English star was a good thing to be.

MV redid their sums again in 1956, altering the bore and stroke to 52mm x 58mm, bumping the redline to 11,000 rpm, and adding four individual megaphones. The engine produced 67–70 horsepower with two-valves-per-cylinder. That represented a ten horsepower gain over a four-year period, amounting to only a five-percent advance per annum. But there were reasons for modest engine progress. Handling, not power, was the problem; everyone, including Gilera, was always trying to get road-holding caught up with power. So there wasn't a pressing need month-to-month for more power. Furthermore, truly temperamental

engines squeezed to their limits offended the Italian conception of how-racing-should-be-done in the 1950s. Engines were expected to run a half-dozen races before requiring attention, and paddock visitors might well see MV riders chugging around the grounds on their racers/pit bikes.

Nineteen-fifty-seven should have been the year of confrontation between Surtees and Duke. Again the showdown fizzled out. Duke crashed early in the season and returned to the sidelines. Bob MacIntyre substituted for Duke, but Mac later crashed and the 500 World Championship fell to Gilera's Libero Liberati. And what of Surtees and the MV? The season read like Job's catalogue, but all the woes could not disguise one central point: In 1957 the Gileras were superior racing motorcycles.

The following season might have been the year of settlement between Surtees and Duke, MV and Gilera. It wasn't. The Italian motorcycle factories faced a more serious reckoning at the end of 1957. Profits had disappeared in a tumble-down market, so the factories retrenched, trimming all budgets and axing their racing programs. The helicopter business by contrast thrived, and Count Agusta's fire engines (and his 125s, 250s and 350s) stayed in the field, ready to pick up world championships.

Surtees and his MV 500 fire engine overwhelmed his underwhelming opposition in 1958, 1959 and 1960. "Strawpaper victories," the detractors cried, "against no opposition." To those who had long insisted that MV was just appropriate fodder for the Gilera cannons, the strawpaper conclusion fit nicely. Of course, it ignored certain realities: during his MV years Surtees extended and sharpened his talents both as a racer and a development rider, and the MV 500, steadily upgraded and refined, benefited enormously from Surtees' growth.

The *pilota grande inglese* knew the big four far better than most MV teamsters cared to know it. Carlo Ubbiali and Tarquinio Provini, MV's 125 and 250 standouts, considered the 500 four much too heavy, too fast and too dangerous. The best thing anyone could do, they thought, was to stay off the brute.

Gary Hocking disagreed. The Rhodesian rider had originally signed up to ride the small-bore MV grand prix bikes, but he quickly passed through the ranks to ride behind Surtees on the 500. Like Surtees, Hocking saw a racing bike as an intricate collection of integrated mechanical systems; and Hocking, as much as Surtees, wanted his mechanical house in order before racing seriously. Understandably the MV reached its last stage of development under Surtees and Hocking.

The frame, for example, was brought to its final configuration. The engine cradle bolted to the front downtubes just below the steering head and rejoined the frame behind the swing-arm pivot pin. The engine could be dropped out the bottom of the frame. The upper frame rails were pulled down and run right over the top of the

(Continued on page 116)



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CIRCLE NO. 61 ON READER SERVICE PAGE.

YAMAHA XT500C

● In the old days partisan lines between dirt riders were cleanly cut and deeply entrenched. If you rode in the dirt, you had one of two choices: a vertical-twin sled or a 500/600cc four-stroke single thumper. The only other option was a V-twin—a far less formidable cross-country bike. Back then, a rider who stuck out a season of cross-country riding or racing automatically and necessarily became mechanically adept. He had no choice; those dirt bikes were built, not bought, and trick parts were made, not purchased. Without meticulous preparation neither expert nor novice made it to the finish line. Dependability was neither the sled's nor the thumper's long suit.

The vertical-twin sled—the stretched-out Triumph, Rickman Metisse and Norton P-11—has since become a collector's item. Simultaneously the big thumpers—AJS, BSA, Ariel, Matchless and Velocette—succumbed to the pressure of progress. Yet it is progress that has brought life back to the big single a decade after its demise. Yamaha has reached into the past and lifted the 500cc thumper forward to a level of quality, dependability and practicality that it has never before enjoyed.

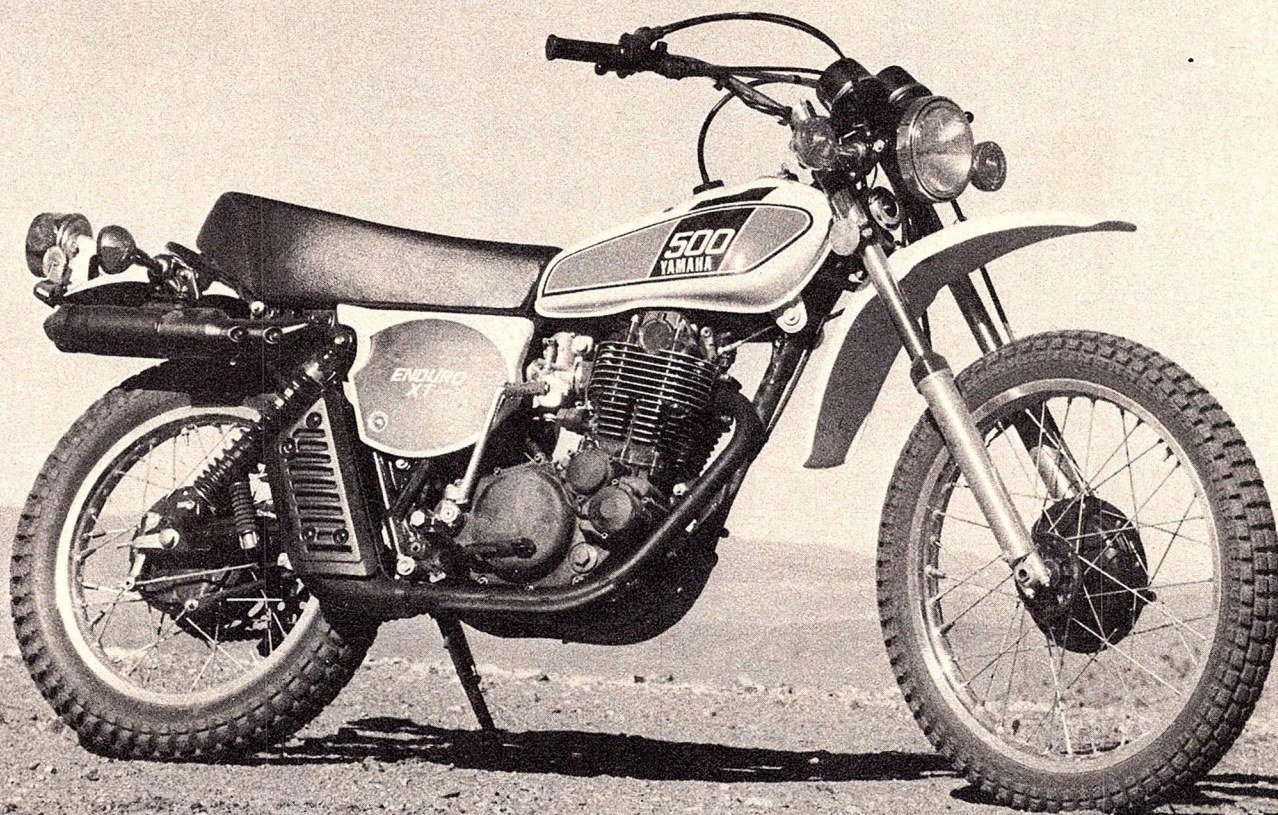
Those of us who owned any of the legendary European thumpers remember the slugging engine performance they delivered. Nothing else was quite like it. But we also

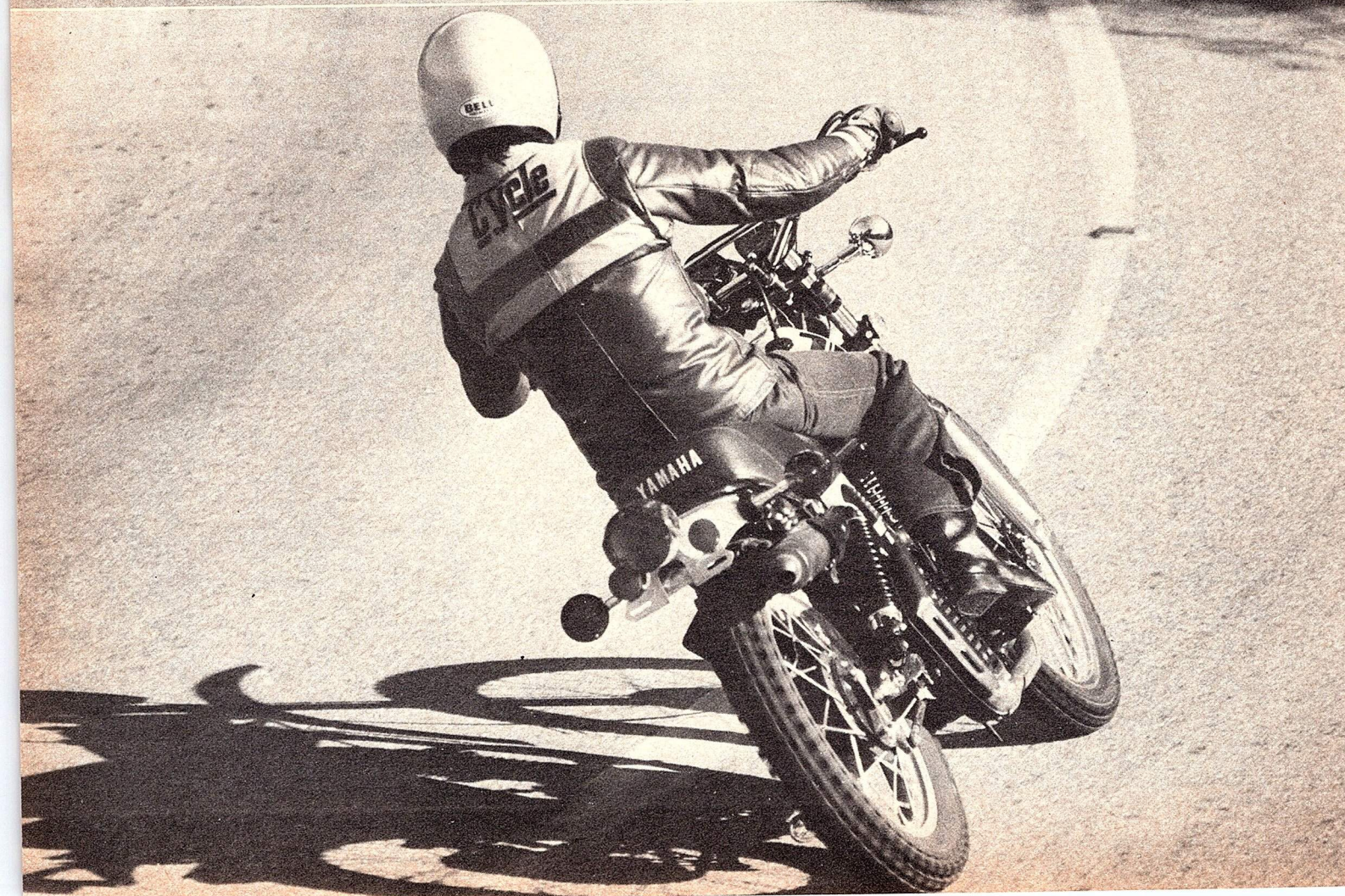
recall the cable ferrules that fell off, carburetor slides that wore out after three races, incurable oil leaks, Joseph Lucas' unpredictable electrics, fragile clutches, porous castings, blown head gaskets, wavering ignition timing, having to relocate the gearbox and rear wheel in order to adjust the primary chain, gusseting and welding frames and roasting the engine and oil over a hot bed of coals on cold mornings so the kick crank could be pushed through. For those who endured the rigors of it all, there was sympathy in companionship. Some call that era the good old days; others know they were the conclusion of dirt riding's primitive times.

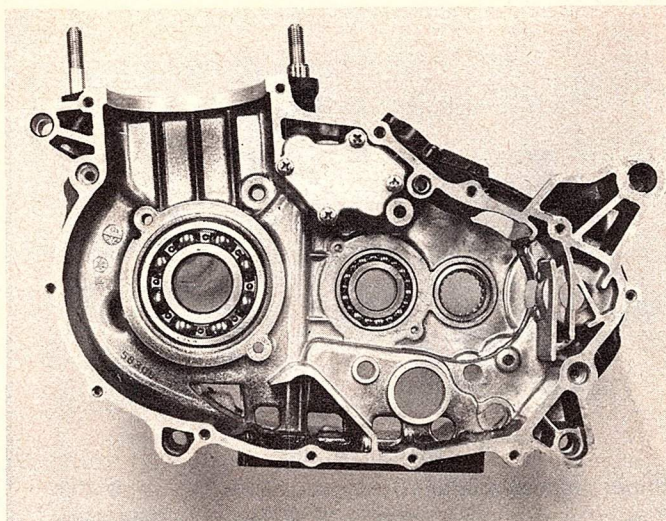
Yamaha, thankfully, didn't look back too

The only thing old about Yamaha's thumper is booming performance.

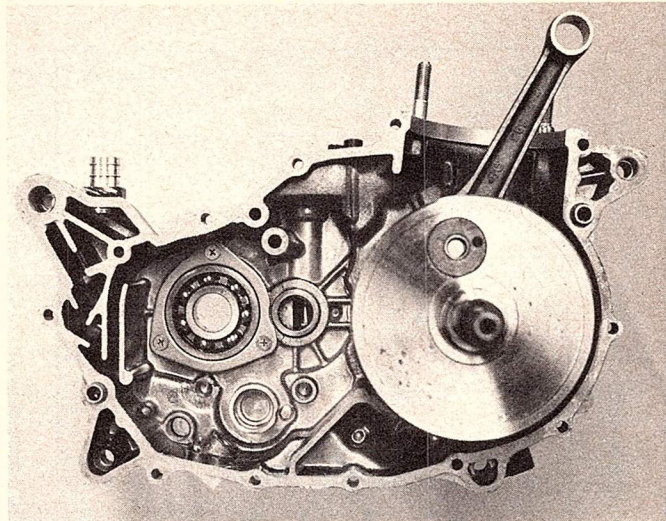
In all other respects it's a 1976 motorcycle and the best of the dual purpose street machines.







Engine castings are superb. Compact design of big single keeps weight down.



Small flywheels and short rodding have allowed for a compression in height.

YAMAHA XT500C

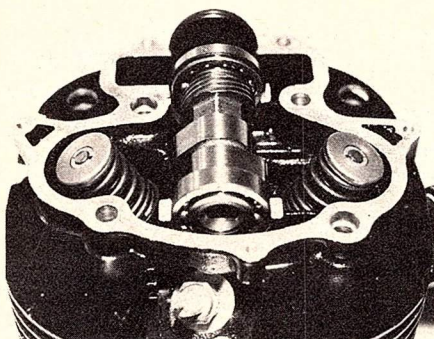
closely when they designed the XT500 enduro. For all intents and purposes their 500cc four-stroke single bears no direct hereditary resemblance to European thumpers except in displacement and general engine concept. The big single is a new-era thumper for second generation riders.

The engineers at Yamaha's Hamamatsu home facility have done a remarkable job in compacting the engine. Most European thumper engines were very tall and very long. Enormous crankshaft flywheels, lengthy connecting rods, big pistons and separate gearbox assemblies forced a large portion of the old chassis precariously close to ground level. Yamaha's size reduction was accomplished by using small diameter flywheels, short-rodding the engine, trimming piston height and incorporating the unit-construction engine/transmission. The result is a comparatively small engine compartment and 8½ inches of clearance.

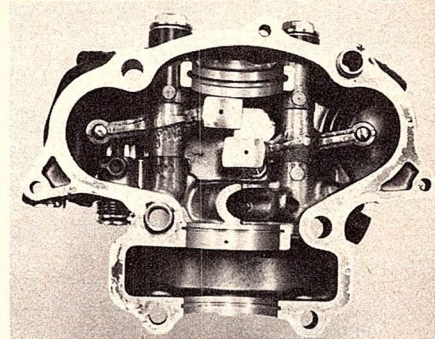
By today's standards the engine design is conventional. Valve actuation is via a crankshaft-driven chain to a single overhead camshaft. Yamaha uses single exhaust and intake valves in the XT500. The four-valve system used in Yamaha's XS500 street twin and Honda's 250/350 XLs has not been carried over to the new single.

The XT500 has nearly-even bore and stroke dimensions—87 X 84mm (3.42 X 3.3 inches). Total displacement is 499cc, or 30½ cubic inches. The pressed-together crankshaft, camshaft and transmission shafts ride in ball, roller or needle bearings. Two exceptions are the piston pin, which rides in the copperized small end of the rod—no bushing or bearing—and the ignition points idler gear. A single oil pressurizing assembly incorporates two trochoidal pumps. The larger trochoidal scavenge pump pulls oil up from the engine pump and delivers it to the oil reservoir (chassis top- and down-tubes) with an inline bypass that directs lubricants down to the gearbox lay- and mainshafts. The smaller feed pump receives cooled oil from the frame tubes and pushes it through an inline filter to the camshaft and crankshaft big end. A check-valve upstream from the oil filter prevents excess pressure flow through

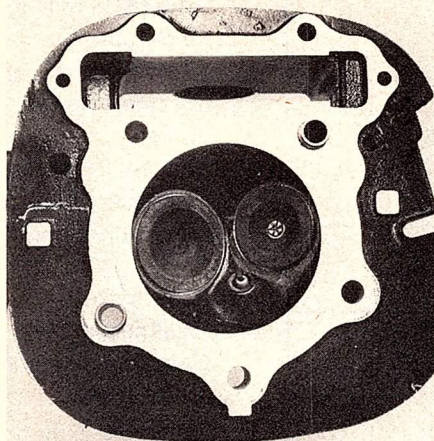
MAY 1976



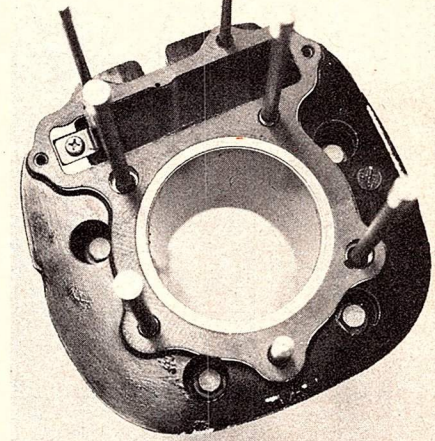
Camshaft rides in ball bearings and drives tachometer. Cam timing holds redline down to 6500 rpm.



Rocker arms actuate directly off camshaft lobes. Valve adjustment can be done with simple tools.



Two-valve system is used rather than four. Power spread is even but narrow. Piston has flat top.



Separate studs are used to retain cylinder to crankcase and cylinderhead to barrel.

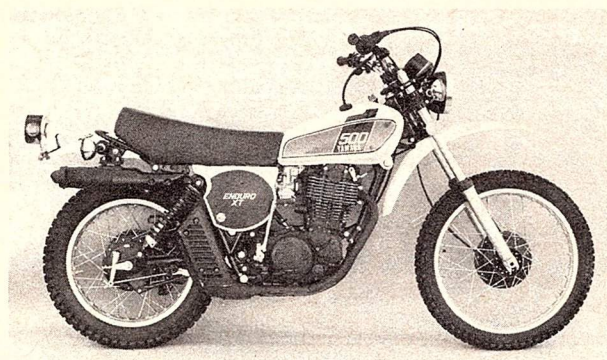
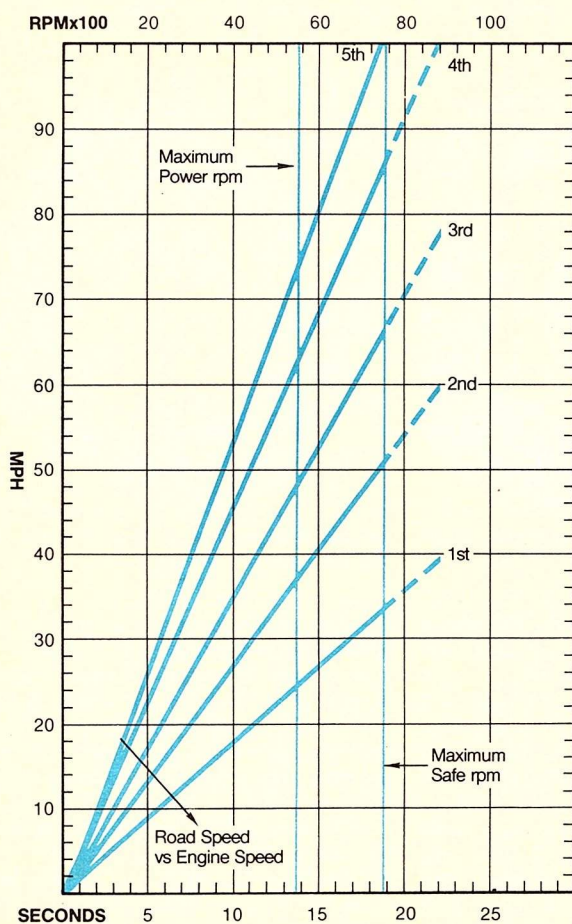
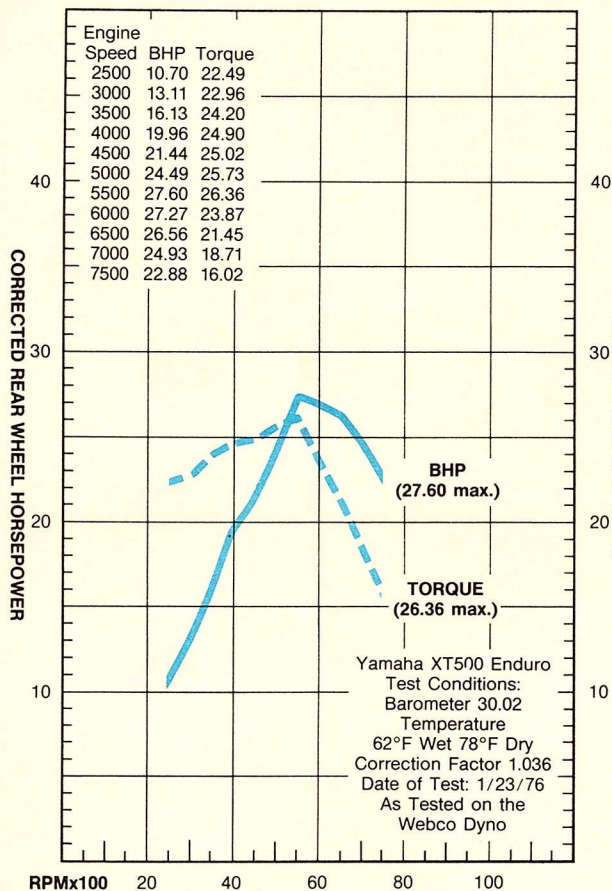
the element; an alternate relief valve allows excess pressure to feed oil passages to the top end and crank if the filter clogs.

Ignition is a basic flywheel magneto system just like Yamaha's two-stroke enduros. The heavy external flywheel is fitted to the left side of the crank and provides additional rotating mass for the small crank wheels. Ignition points are actuated by a crankshaft-driven idler gear rather than from the camshaft end (as with the XL Hondas). The idler gear system eliminates the timing fluctuation that occurs with typical chain-driven OHC-ignitions.

The XT500 transmission is an unques-

tionable advance over the archaic four-speeds and ill-designed clutches once fitted in thumpers. The semi-oil-bathed clutch is huge in circumference and holds 15 aluminum and phenolic plates. Primary drive is through straight-cut gears. The five-speed gearbox is equally robust and the ratio spans between shifts are closely segmented. The drive chain is a D.I.D. #520 with a removable master link. Overall drive ratio of the XT500 is quite tall at 5.49:1 in top gear, which gives the bike a projected top speed of 102 at 7500rpm.

In the old days the ultimate sign of off-road masculinity was to ride or race a thumper.



YAMAHA XT500C

Price, suggested retail	\$1400
Tire, front	3.00 x 21 Bridgestone Trail Wing
rear	4.00 x 18 Bridgestone Trail Wing
Brake, front	160 x 25mm (6.3 x .98 in.)
rear	150 x 25mm (5.9 x .98 in.)
Brake swept area	243.5cm ² (37.6 sq. in.)
Specific brake loading	14.87 lb./sq. in.
Engine type	Four-stroke, OHC, single
Bore and stroke	87 x 84mm (3.42 x 3.3 in.)
Piston displacement	499cc (30.5 cu. in.)
Compression ratio	9.0:1
Carburetion	1; 34mm; Mikuni
Air filtration	Foam, oiled
Ignition	Flywheel Magneto/Coil
Bhp @ rpm	27.60 @ 5500
Torque @ rpm	26.36 @ 5500
Rake/Trail	30½°/135mm (5.3 in.)
Mph/1000 rpm, top gear	13.5
Fuel capacity	2.3 gal. (8.7 liters)
Oil tank/sump capacity	2.6 qt. (2.5 liters)
Electrical power	Flywheel Magneto, 6-volt
Battery	6-volt/6-amp hour
Primary transmission	Straight-cut gear, 2.566
Secondary transmission	D.I.D. Chain, #520T
Gear ratios, overall	(1st) 16.638 (2nd) 10.979
.....	(3rd) 8.403 (4th) 6.470 (5th) 5.490
Wheelbase	56 in. (142 cm)
Seat height	35.5 in. (90 cm)
Ground clearance	8.5 in. (21.6 cm)
Curb weight	319 lbs. (144.7 kg.)
Test weight	559 lbs. (253.6 kg.)
Instruments	Speedometer w/reset, tachometer
Standing start ¼-mile	15.02 sec.; 84.11 mph
Average fuel consumption	Off-road—35 mpg,
.....	highway—45 mpg
Speedometer error	30 mph, actual 29.62
.....	60 mph, actual 58.13

Stripped to the bone and drained of gas a light thumper, or sled, weighed in at 340 pounds. While both thumper and sled riders had the same amount of iron to throw around, it was the big single that required the strength of a back-woods gorilla to start. Puny spark, gumbo-thick oil, sloppy carburetion and primitive ignition retarding devices made starting a task dreaded by all. Yamaha has not circumvented the starting problem with any ingenious design trickery. The kick crank system is the same as used in all of Yamaha's two-stroke enduro engines, and it has a start-in-any-gear feature—something the European thumpers never had. Yamaha has acquired a leverage advantage by gearing-down the cranking ratio, so less effort is required to turn over the engine. The XT500 requires multi-grade 20/40 weight oil which has a lower viscosity level when cold for less cranking resistance. The centrifugal advance/retard points plate holds ignition timing back at engine cranking speeds. Clean carburetion is aided by the Mikuni starter-jet fuel richener.

If the starting procedure is followed precisely no-one, regardless of stature, will have difficulty lighting up the XT500. One of Yamaha's service engineers prides himself on his ability to start the thumper time after time by hand.

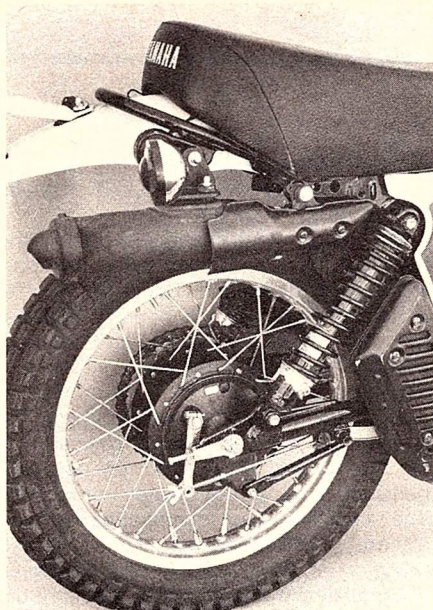
Most first-time Yamathumper riders master the starting method in a half-dozen attempts. The engine will start in one to three kicks whether hot or cold. Running noises from the XT500 are controlled remarkably well. Tight piston clearance (.002-in.) and close tolerances in the engine drive train virtually eliminate any ringing, banging or whining. The twin-phase, dual-silencer muffler system reduces exhaust noise to pleasant chuff-chuffs and woof-woofs—more of an accomplishment than you might imagine. The loudest motorcycle engine Cycle ever checked was a Harley fuel dragster that made 122 dB(A); second was an open-pipe British thumper which produced 116 dB(A). The XT500, using Highway Patrol measuring methods, reads in the low 80s.

Another notable discomfort Yamaha engineered out of the thumper is fierce engine vibration. European big singles were renowned for the thunderous vibration they transmitted through the chassis to all components and the rider. The XT500 is refreshingly free from the shaking that used to tear parts from old singles. The Yamaha rumbles at low engine speeds under acceleration but smooths to a low-pitched tremble when crankshaft speed climbs over 3000 rpm. The acceptable vibration level of the XT500 will assure long component life and keep rider annoyance and fatigue minimal.

The XT500's broad, even torque spread is the solitary nostalgic European thumper feature worthy of Yamaha's duplication. Guttery torque is the hallmark of the 500cc four-stroke single, and the Yamaha delivers power comparable to any of the famous old production thumpers. As the Webco dynamometer graph shows, the XT500 produces well over 20 lbs./ft. torque from 2500 to 6500 revs. The closest present-day comparison that can be made is to Honda's XL350, which produces less maximum

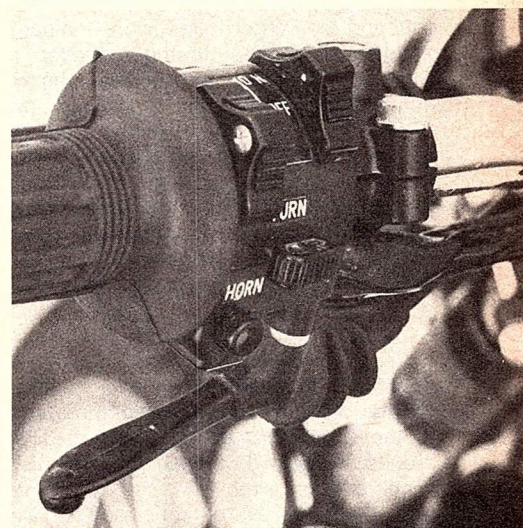
(Continued on page 108)

MAY 1976

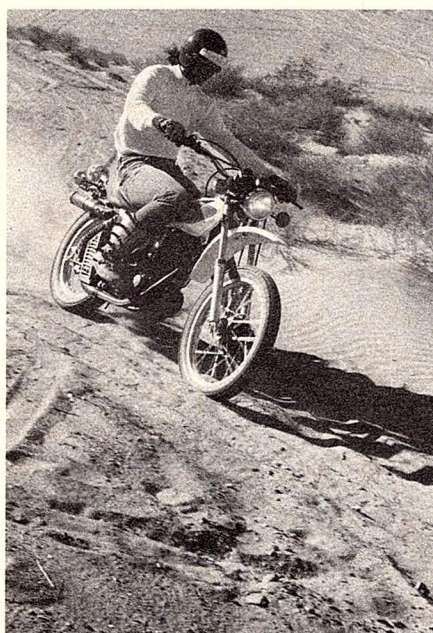
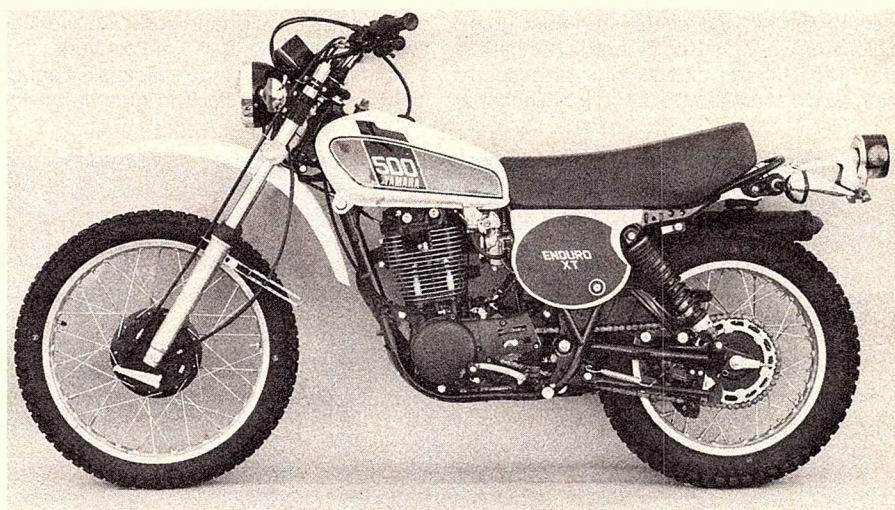


Dual silencers tone down noise to pleasant level. Shocks are rigid in dirt but acceptable on street.

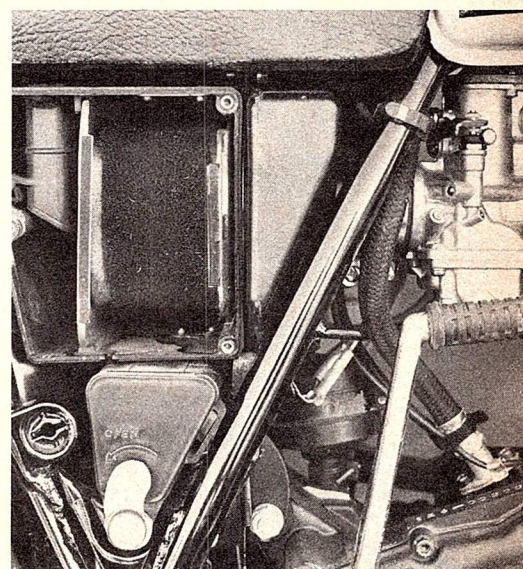
YAMAHA XT500C



Switches are logically designed and placed. Compression release lever opens the exhaust valve.



Riding on easy trails and smooth roads is pleasant. Engine torque makes riding effortless.



Foam air cleaner and box silence intake noise. Carburetion is clean and starting is very easy.

● Tim Witham is credentialed to the hilt. His company, S&W, was formed in 1951 by Witham and Art Sparks to manufacture cam shafts and valve springs. Sparks went on to found the Forged True Piston Company; Witham, subsequent to the formation of S&W, prepared the racing Triumphs for Johnson Motors, Triumph's Western distributor. Tim started tuning for the great Joe Leonard in 1963, a motorcycle association that lasted until Leonard jumped into Championship race cars. The motorcycle association then became an automobile association—Witham prepared Leonard's Offenhauser engines during that period when Joe was driving for Parnelli Jones.

The S&W valve spring business, meanwhile, was thriving, and in 1969 Tim naturally drifted into the manufacture of suspension springs. Not terribly thrilled with the quality of the shocks his springs were installed around, Witham developed the first S&W shock and fork kit in 1971, and in a period of two years had become one of this country's most important supplier of suspension components. He works closely with desert racers, AMA Grand National racers, motocross racers, Production racers, street racers and factory racers—the most prestigious of whom is Ken Roberts. (Witham's ties with Roberts extend beyond suspension work; for the 1975 and 1976 seasons

Product Evaluation

Tim has been charged with doing research and development on Roberts' 750 Yamaha twin dirt track engines.)

The rate at which suspension theory and hardware have advanced during the past two years is staggering. The acceptance of motocross racing in this country, together with improvements in engine and tire technology, have mandated fork, shock and spring sophistication. But for a number of reasons the street rider, specifically the big bike street rider and more specifically the big bike touring street rider, has not really benefited from all the suspension activity. The reasons why are manifold: he is generally not as technically sensitive as his dirt-riding counterpart; the differences between acceptable and unacceptable are more difficult to ascertain on the road than they are on the dirt; and suspension performance deteriorates on the street slower than it does off-road, which clouds a rider's perceptions of how his shocks and fork are working compared to how they used to work.

But high-performance suspension equipment is presenting itself in quantity to the

street-rider, finally. Boge-Mulholland, Koni, Girling, Red Wing, Marzocchi, Ceriani and S&W all offer shocks that can be adapted to heavy street bikes. Until now the emphasis has been placed by the manufacturers on improved rear-wheel control at high speeds. S&W's brand new air-spring rear shock emphasizes, in theory at least, ride comfort.

The thinking goes like this: air is in many ways superior to steel as a spring medium; the ride height and spring rate can be adjusted with nothing more elaborate than a source of compressed air; air, unlike steel, will never lose its "springiness."

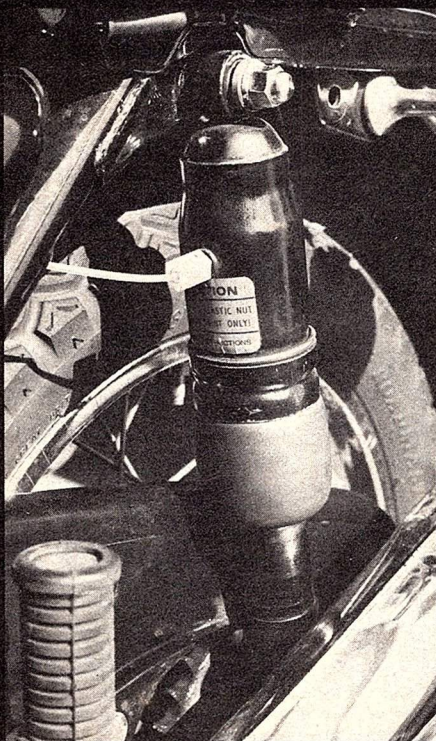
The counter-thinking goes like this: while air is superior as a spring medium in short-travel applications, long-travel ones demand secondary air reservoirs and other complex technology; a steel spring may sag, but it'll never leak; and a source of compressed air is more difficult to find on short notice than a simple ring spanner found in most motorcycle tool-bags; while spring rate is not influenced by the spanner, ride height certainly is.

Taking the pros and cons into careful consideration, Witham decided to go ahead and market his air-spring shocks. The S&Ws are straightforward. Internal valving and fluid are conventional S&W, and the air-spring is contained by nothing more than an airtight sleeve clamped securely to the shock's

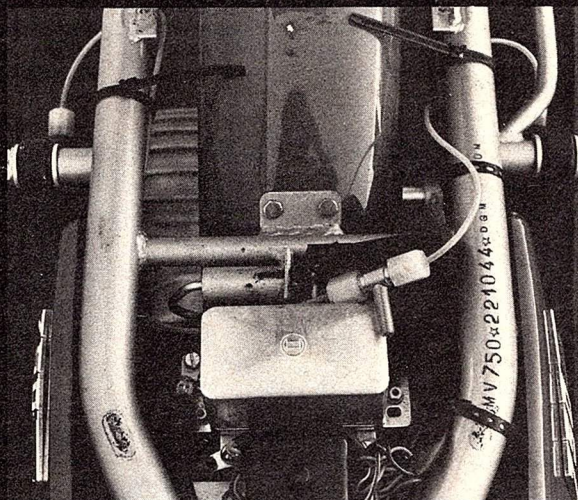
S&W AIR-SPRING SHOCKS

S&W was after a rear shock absorber that could be adjusted for comfort and load. What they developed is only marginally more comfortable, but boy, does it ever work as a performance shock.

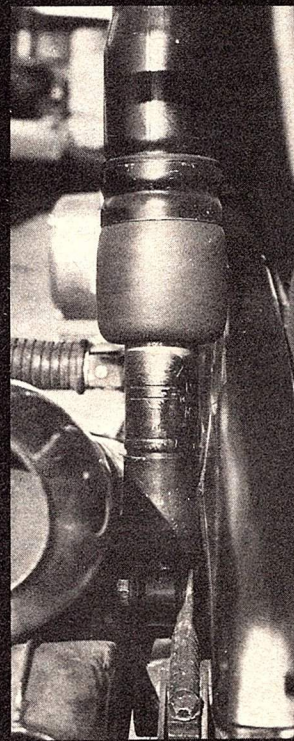
By Cook Neilson



Installation on our Z-1 was a snap, but care must be taken when plastic air lines are routed. The lines are plenty strong, but do not appreciate sharp bends.



Valved junction block, shown here under the seat of an MV Agusta, accepts a standard-sized air chuck and should be covered with a stem cap. Common fitting assures equal air pressure in both shocks.



Air shocks are slightly bigger than conventionals. Roll sleeve lightly contacted chain guard on 900 Z-1.

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normal lower body, rolled inside-out like your mother rolls up your socks, and clamped again to a cylindrical upper "umbrella." This roll sleeve has been thoroughly tested; Monroe developed it, Monroe manufactures it for S&W, and Monroe has been using it for years on their Load-Leveler automobile and truck shock absorbers.

A fitting is secured to the outside of the upper "umbrella." Air is fed in through a high-strength plastic line, attached to the fitting with an o-ring and a plastic nut. The other end of the plastic line (the same line used by many after-market manufacturers as high-pressure hydraulic line for disc brakes) is secured to a valved junction block. Air for both shocks is pumped through the common junction block—that way both shocks have exactly the same air pressure and "spring" rate.

The bike selected for this shock evaluation was a staffer's personal 1973 Kawasaki Z-1. The bike had 11,000 miles on the clock, and had been used as a test-bed for Koni shocks, conventional S&Ws and its own original Kayabas. Installing the air-spring shocks presented no problem. The shocks were simply bolted on and the air lines trimmed to length, secured finger-tight to the shocks and routed under the side-covers to the tool-bag area beneath the seat, and then secured to the valved fitting. We were advised to use about 55–58 lbs. of air for riding one-up. Filling introduced us to the shocks' first, and substantially only, hassle. They do not hold very much air, and lose two pounds of what they have with every air gauge reading. So bringing them to a precise level of pressure involves a few minutes of filling, measuring, bleeding off, re-filling, re-measuring, and re-bleeding. (S&W is considering offering a special junction fitting or special shock body fittings with

smaller orifices to make filling and adjustment less time-consuming.)

Once the shocks were brought to the specified level, two of us (one riding, one observing) headed for the twisties and the open road for evaluation. We found that in high-speed, high-loading conditions the S&W air shocks controlled the Z-1's rear-end activity better than any shocks we had tested on it. The big Kawasaki, with the Konis and the conventional S&Ws, had taken an intense disliking to a particular section of Racer Road that makes a downhill transition, through some bumps, from a moderate left-hander to a decreasing-radius right. With the air-spring S&Ws the bike handled the section admirably—not perfectly, but certainly better than it ever had before. Additional streaks down Racer confirmed the shocks' capacity for settling down the Z-1, and when they were returned for a reduction in compression damping (hopefully for more comfort) and then re-installed, high-speed steering accuracy remained. The air shocks were not intended for tearing around the countryside and playing hell with speed limits—yet they manage nicely.

They were intended for straight-line touring comfort and easy, accurate spring rate adjustability, and while they do offer more comfort than the shocks heretofore installed on the Kawasaki, they do not provide the mellow comfort that BMW rear suspension components do. We adjusted the air pressure down to 40–45 lbs in search of That Fabled Bavarian Ride, and never found it. The shocks' limited air capacity is why. Below a certain pressure level the bike simply drops down on its shocks until pressure in the air cavity becomes sufficient to support the bike's sprung weight. With more internal area (leading to more air capacity, which would correspond to greater spring

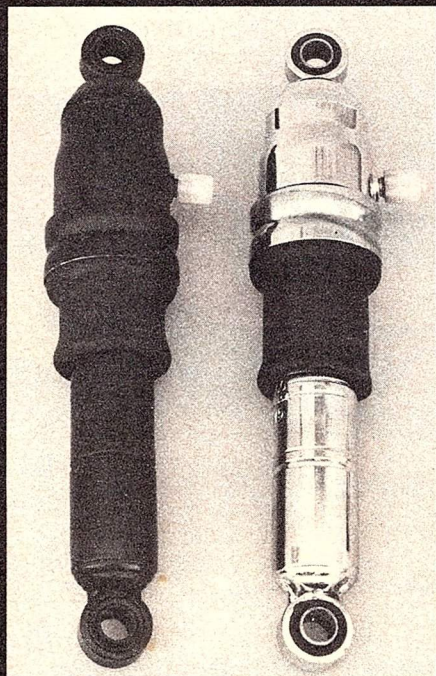
length on a conventional shock), equilibrium could be attained at a lower pressure level, and then assuming that the shock had only light compression damping, the ride could be made as soft as you'd want.

But there are, as Witham points out, limits to what air can be made to do. "I am not an air addict," he says, and explains that were the perfect air suspension system devised, "you couldn't fit it on a motorcycle." Unlike a conventional single-rate spring, air in a chamber builds up resistance in a non-linear way as it is compressed. If a chamber is subjected to small variations in its internal size (comparable to a suspension component with limited travel), then air can be made to function nicely.

It functions nicely in this particular application—the shocks are more comfortable than others we've tried, and they work exceptionally well in controlling the Z-1's traditional gyrations at high rates of speed.

We think the air shocks are neat, and if you have a large-displacement street bike we think you'll like them too. They're available in black for \$96.00 or in chrome for \$116.00, they come with all lines, o-rings and necessary fittings, and they're available in lengths of 12-in., 12½-in., 13-in., and 13½-in. for all Honda fours, BMWs, 380–750 street Suzukis, 250–650 street Yamahas, all Kawasaki twins, triples and the Z-1, and Harley-Davidsons.

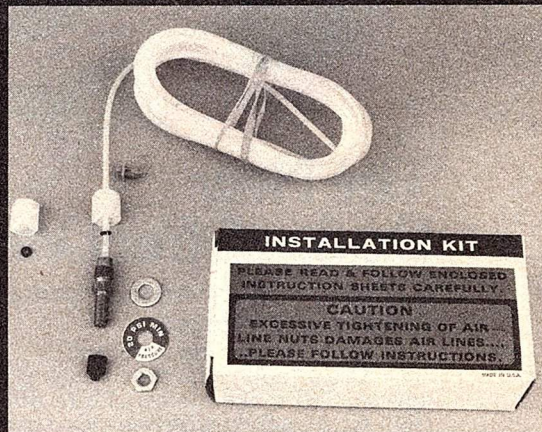
A few cautions: first, the plastic line, while strong, does not take well to sharp bends; second, be sure that the line cannot be pinched by raising or lowering the seat on its hinges; third, do not over-tighten the plastic nuts that attach the lines to the fittings, and make double-certain that the o-rings are in place; and fourth, check the shock pressure regularly, just like you check tire pressure—and for the same reason. ©



S&Ws are available in either matte-black or chrome. Black ones cost \$96.00; a chrome pair will set you back \$116.00. Internals are identical on both.

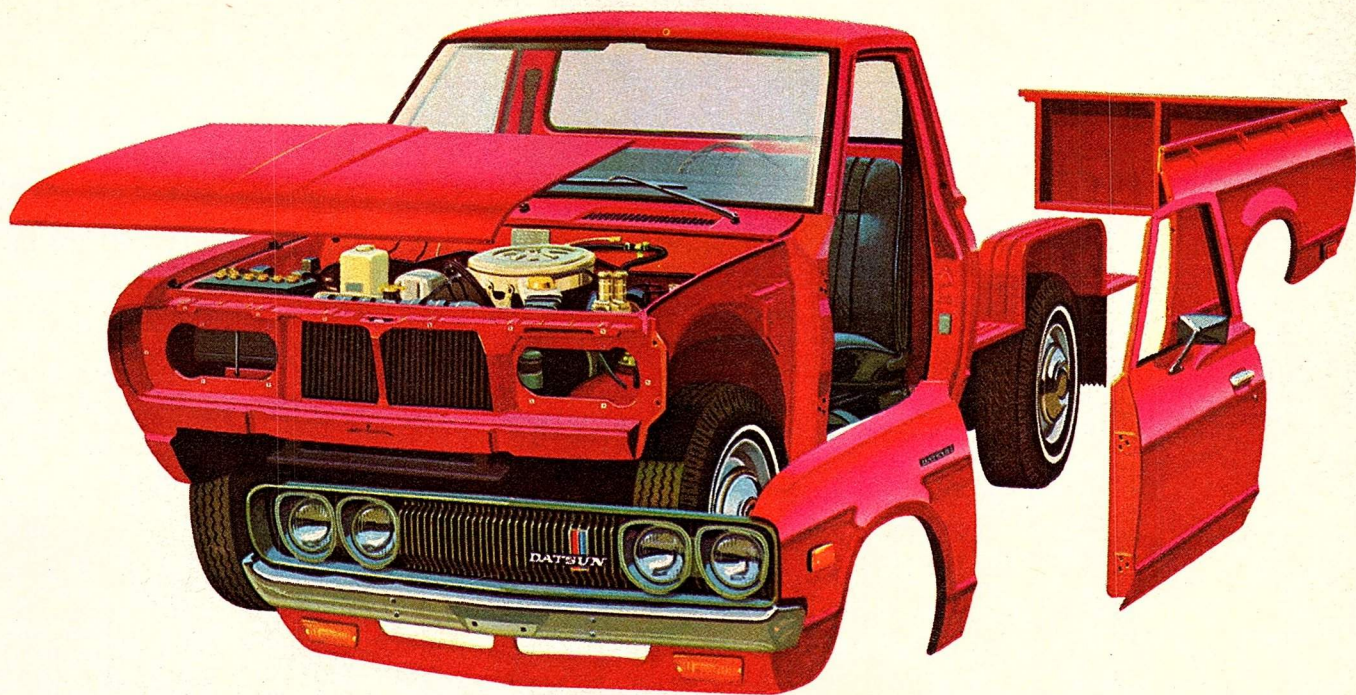


Prototypes had screw-off lower elements so internal damping could be adjusted. Production shocks don't.



Complete kit comes with everything you'll need. When you install shocks, be extra-careful to properly seat and lubricate o-rings.

S&W AIR-SPRING SHOCKS



ECONOMY ISN'T DATSUN'S ONLY STRONG POINT.

America's favorite. You're looking at America's Number One selling small pickup: Datsun. One reason is excellent gas mileage. 31 MPG hwy, 22 city. (EPA mileage estimate. Manual transmission. Actual MPG may be more or less, depending on the condition of your truck and how you drive. California MPG varies slightly.) Now take a look at some more reasons.

Strong Points. Li'l Hustler Pickups are tough all over. To wit: Gritty 2000cc overhead cam engine. All-steel body and bed. Rugged ladder-lattice frame. Durable torsion

bar front suspension. And heavy duty truck tires. Need we point out more?

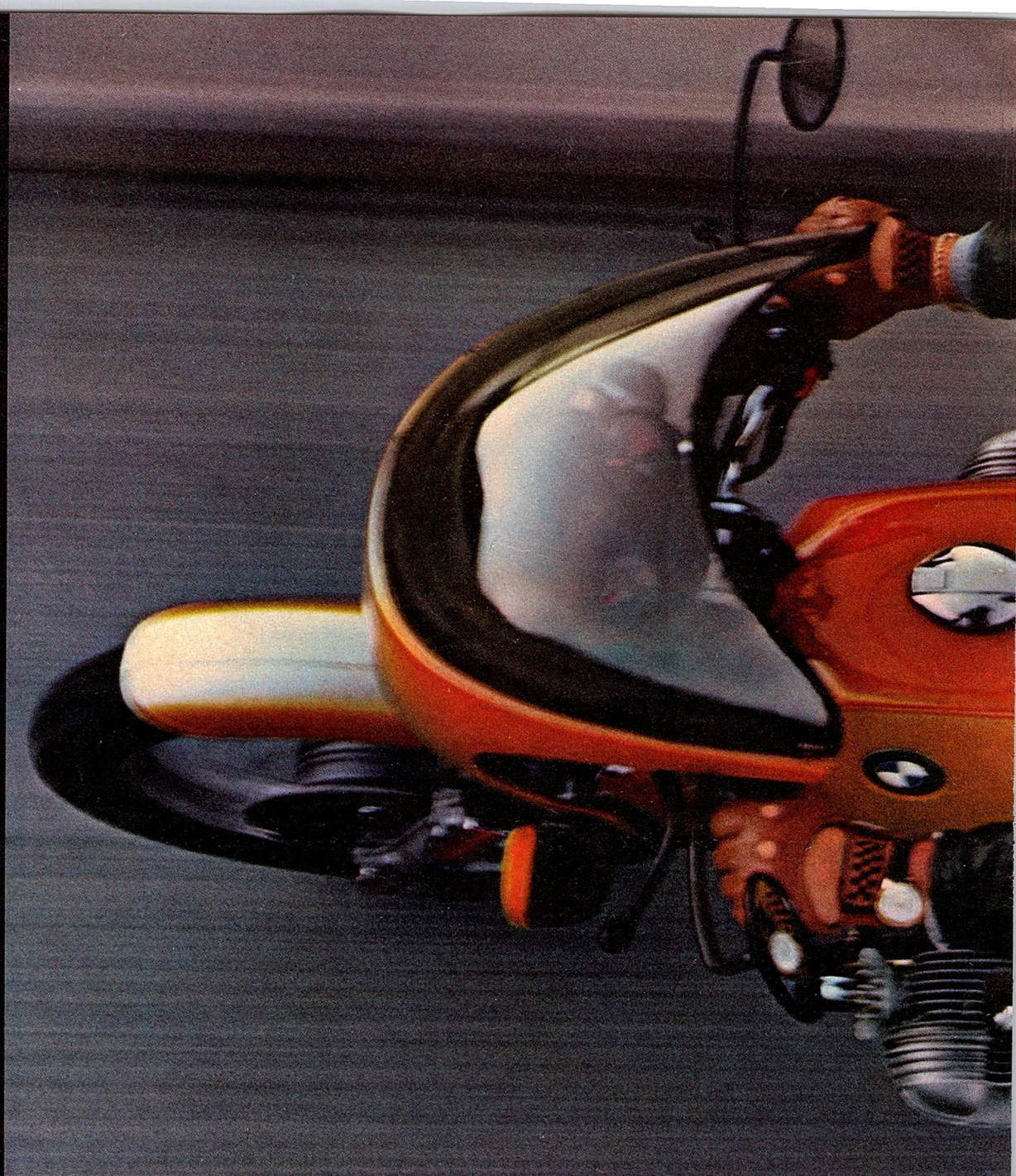
6- or 7-foot bed. Datsun pickups come two ways. Our regular Li'l Hustler comes with a 6-ft. bed. And our Li'l Hustler Stretch comes with a longer 7-foot bed. Either way, you get a lot of truck for the little money.

Backed by service. Your Datsun gets plenty of strong backing, too. Nearly 4,000 factory-trained service technicians. Computerized parts network. And our 43 years of experience. We figure the longer your Datsun survives, the longer you'll save.



Datsun Daves

AMERICA'S #1 SELLING SMALL PICKUP.



“Why, when most companies are selling you multi-cylinder complexities, does BMW still rely on a flat-twin, push-rod engine? The answer is simple.”

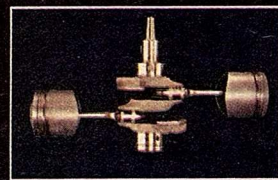
Simple, to be sure. The engineers who have been polishing and perfecting the BMW concept are committed to making the motorcycle as simple as possible. Their philosophy is: the less there is to have trouble with, the less you're likely to have trouble.

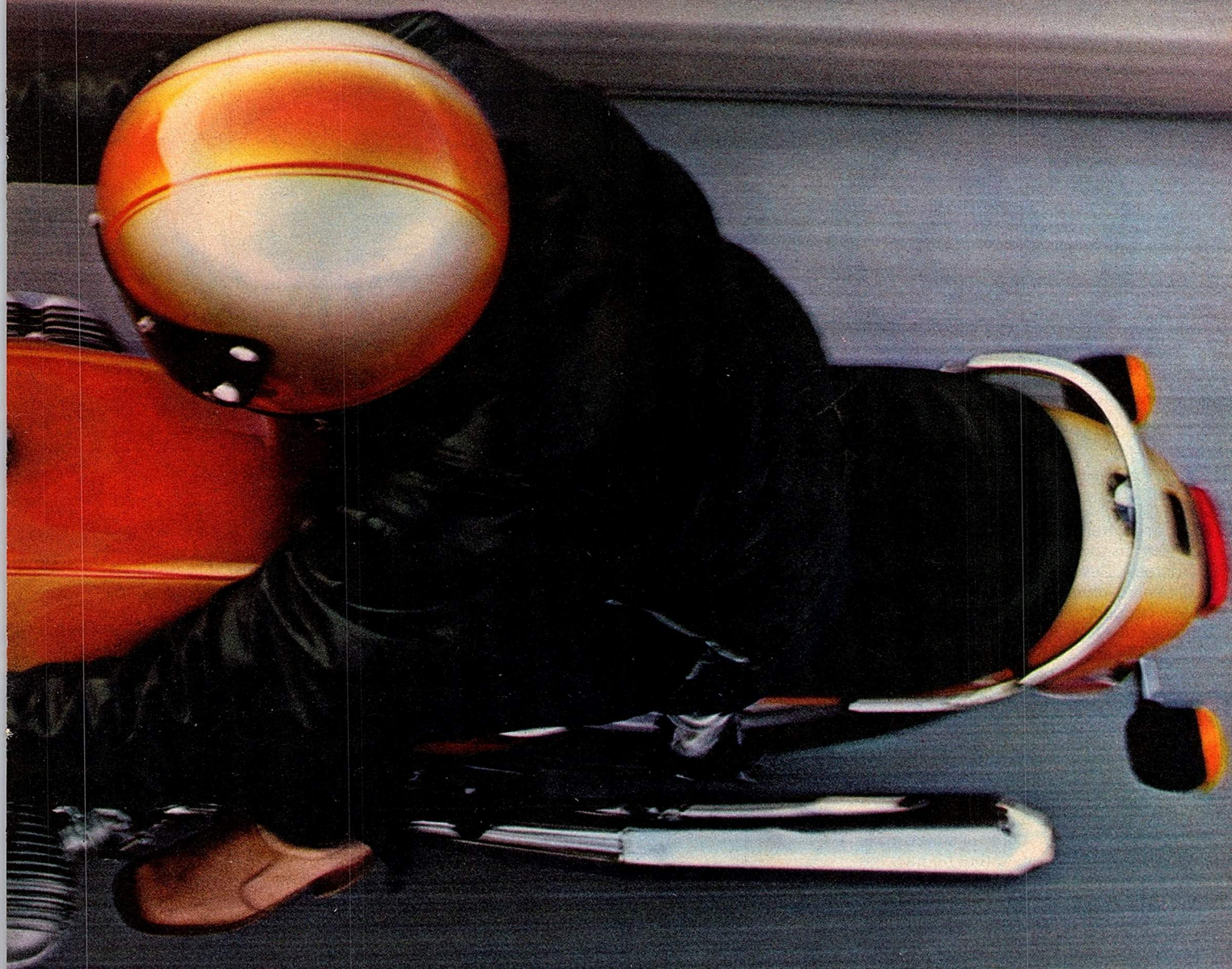
The BMW design has worked well for over 50 years. That's why we continue to use it. Not because we can't change. But because we can't see any intelligent engineering reason to change.

In fact, we use our opposed-twin design for three reasons. First, it runs cool, out in the breeze. Second,

because both pistons move simultaneously, in-out-in-out, the flat twin is inherently smooth.

And third, it is an incredibly powerful design. The big pistons, pushing from opposite sides of the crank, give the BMW engine great torque: the crank is being pushed by great, big, heavyweight thrusts instead of lots of little ones. So you get immediate response, even at low revs. BMW feels this kind of





power makes the safest, most practical road bike. And no multi-cylinder arrangement can do it better.

Why not overhead camshafts? When you can comfortably get 55 ft. lbs. of torque and gobs of horsepower with push-rods, what on earth do you need overhead cams for? Besides, overhead cams would just make the machine heavier.



Talk about simplicity. The BMW has a large, dry, single-plate clutch. It won't slip. It won't stick like a multi-plate wet clutch can. And, face facts, one massive automotive-type plate is bound to be more reliable and more robust than a mess of tiny ones. Again, simplicity works.

Next time you see a BMW, go talk with the guy

CIRCLE NO. 38 ON READER SERVICE PAGE.

who owns it. Ask him how simple it is to maintain. How easy it is to own. How much fun it is to know he can just get on and go, anytime, anywhere.

And then ask yourself what all that engineering complexity really does for you.

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You'll find him in the Yellow Pages.

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90224. Canada: BMW Motor-

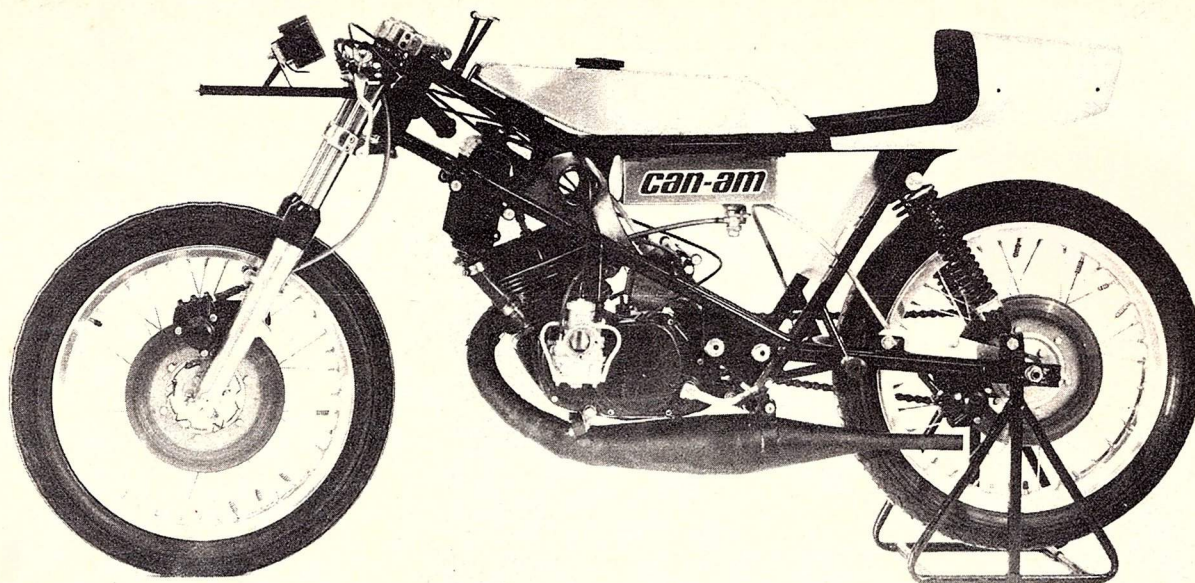
cycle Distributors, Ontario.

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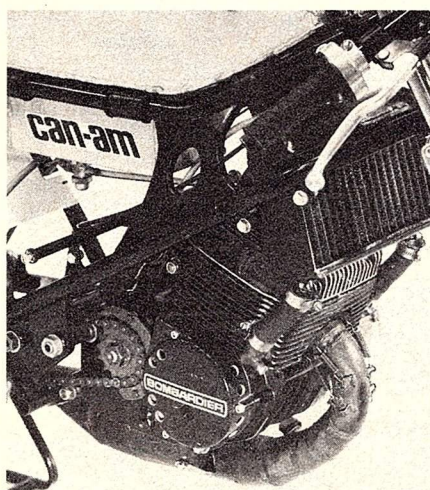
Over 50 years of building the world's finest motorcycles.



TEMPEST FROM A TEAPOT

●Although Ken Rosevear's official job at Can-Am has to do with motocross (Ken is a Motocross Development Supervisor), he maintains a more than passing interest in what's happening on the pavement. He has tuned for Jim Allen, one of Canada's highest fliers—and he has built this immaculate little 175cc water-cooled road racer, with which he plans to compete in Canadian 125cc GP events (the 175 is legal there because it's a single-cylinder engine).

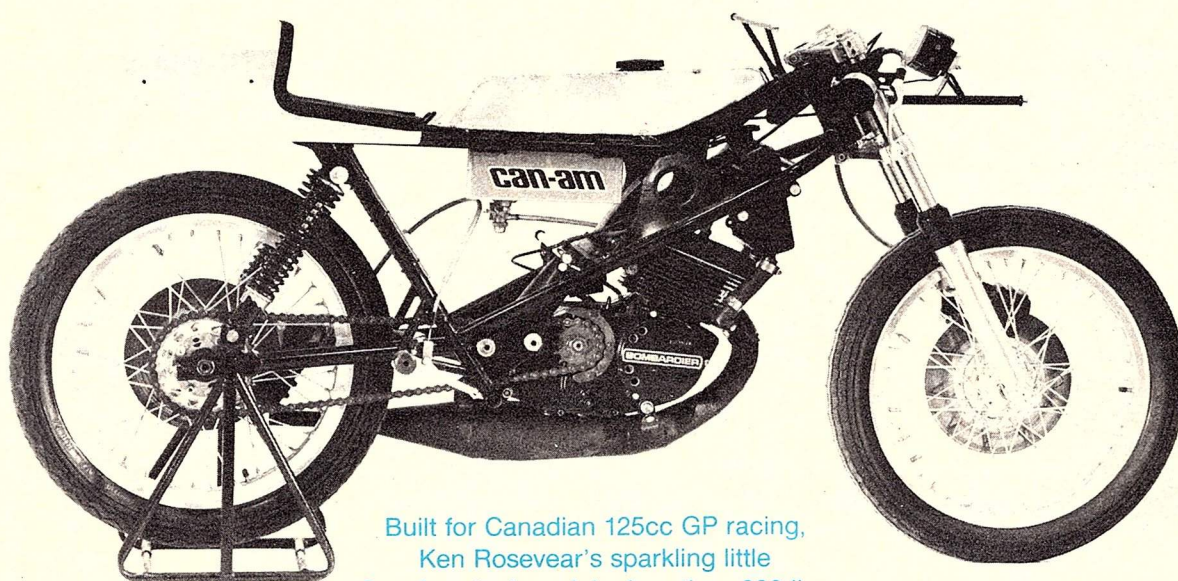
Most of what you see, Rosevear did. He designed and built the chassis, tail section and alloy tank; whittled out the wheel hubs, discs and carriers; plotted and built the pipe; and made the radiator. With transmission oil, engine coolant and fairing (but no gas) the bike weighs 193 lbs., 50.2% of which is carried by the front tire. Its wheelbase is



52.5-in.; its fork inclination is 28.5 degrees.

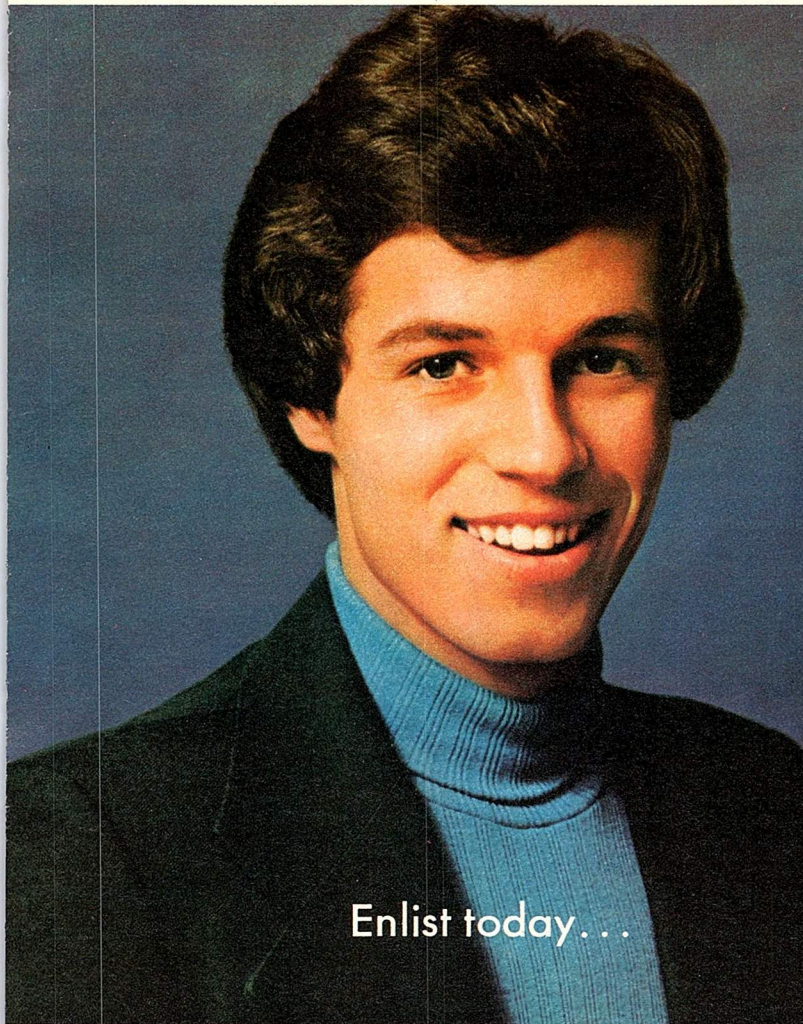
The engine, built on standard aluminum 175 Can-Am enduro cases, has a liquid-cooled cylinder and head developed by Rotax for a street bike application. The cases were modified to accept a side-mounted 34mm Mikuni carburetor. The six-speed transmission was borrowed from one of Can-Am's Bonneville racers; other internals include a standard 175 crank, piston, clutch and a Motoplat ignition system.

The engine has no water-pump; coolant is circulated by Thermo-syphon. Estimated horsepower is 36 at 11,500 rpm. Ken claims that the bike out-accelerates any 125cc Yamaha twin, and nearly matches a 250 Yam coming out of corners. He plans to bump power up to 40 bhp., and then take a crack at a liquid-cooled 250cc single. ●



Built for Canadian 125cc GP racing,
Ken Rosevear's sparkling little
Can-Am single weighs less than 200 lbs.
and produces about 36 bhp.
And guess what—it's water cooled!

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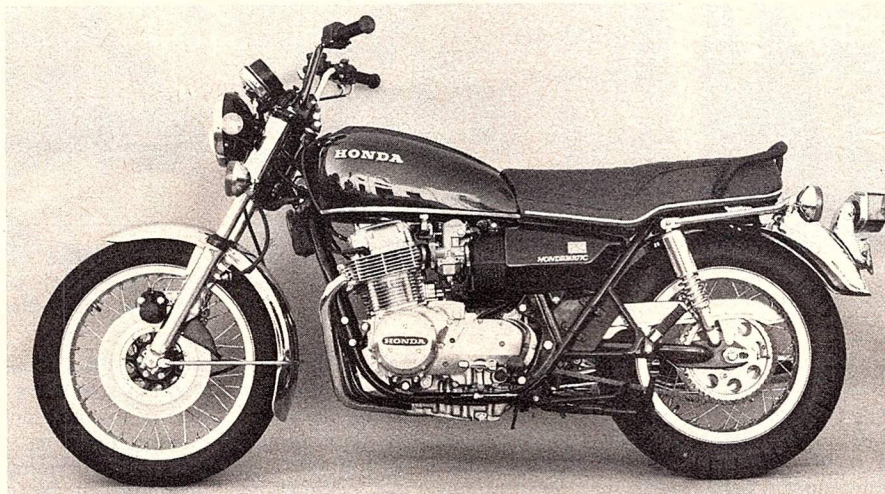
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HONDA CB-750A



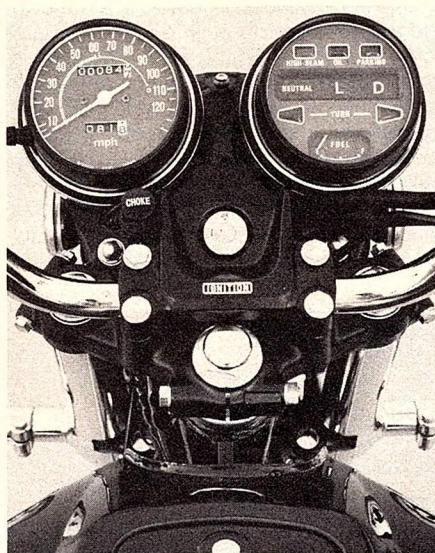
**Less public notice and more concentration
for the rider who has nothing
to prove and places to go.**

● When the Honda R&D types began to ask what we thought of automatic-transmissioned bikes just over a year ago, our response was one of reserved curiosity. Such a machine could range in nature from being the equivalent of Jim Hall's brilliant Chevy-powered two-speed/torque converter racer to the mid-fifties Powerglide. Knowing Honda as we do, something between these extremes seemed probable.

The result of the questioning, which occurred when the still-secret Honda automatic was at the mid-prototype stage, is our CB750A-76 test bike. This new machine is a thoroughly worked-over version of previous CB750 models. The chassis is essentially a CB750F unit with 10mm more wheelbase, and the engine is retuned (for less top-end power and more torque at low rpm) in the same manner as automotive automatic-transmission powerplants. But the engine is no quick lash-up for a marketing test: a completely new set of crankcases and side-covers house the gearbox and fluid coupling components of the Hondamatic system.

The engine breathing changes begin with four 24mm carburetors (4mm smaller than the other CB750s) feeding cylinders with lower compression ratios (8.6:1 vs. 9.0:1 for the CB750-76 and 9.2:1 for the harder-running CB750F). And the camshaft gives less valve-open duration to provide maximum cylinder filling at low rpm. We suspect that the reason for using the four-into-one exhaust had more to do with its easily-tunable scavenging effect than for appearance.

Changing the engine to a wet-sump oiling
MAY 1976



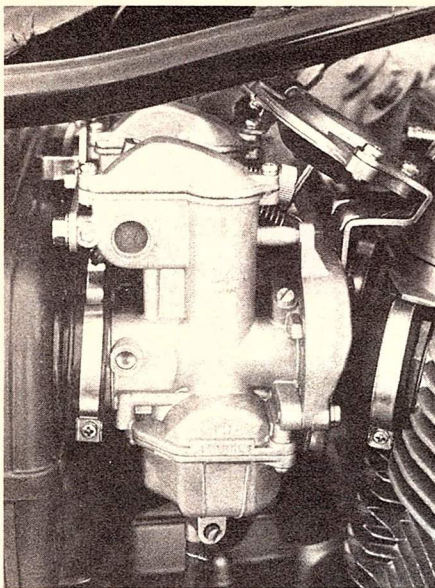
PHOTOGRAPHY: DAVE HOLEMAN (COLOR), PAUL R. HALESWORTH

system, in which the lower crankcase-half holds a common 5.8 quarts for the engine, transmission, and torque converter, allows the installation of a much larger 20 amp-hour battery in the space previously occupied by the remote oil tank. The bigger battery will give much better cold-weather starting and deal easily with multi-stop urban commuting where there are no sustained periods of cruising to allow for re-charging time. Feeding the battery is an alternator, with an output increased from 210 to 290 watts.

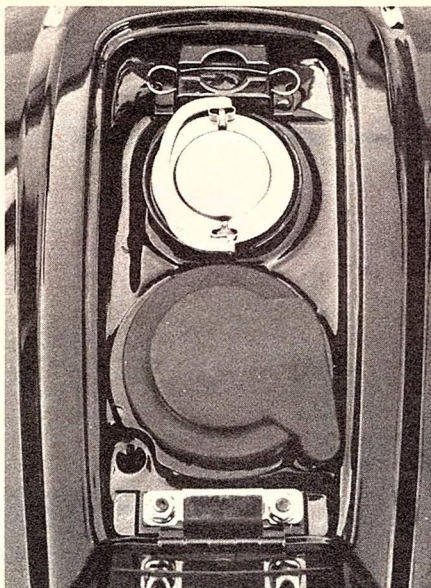
Any similarity to previous CB750 power/transmission packages ends at the crank-

shaft. Even the triplex-roller primary drive chain has been changed to one of the Hy-Vo type to decrease mechanical noise. This chain connects the crank to a jackshaft mounted between the engine and transmission components. The left end of the jackshaft drives tandem engine and transmission oil pumps, and the right end is geared to a mating pinion which drives the torque converter. Actually, the coupling drive is the outermost of three concentric shafts: the one in the middle connects the torque converter stator to a pressure regulating valve, and the innermost is the gearbox mainshaft—which is splined to the converter's driven half.

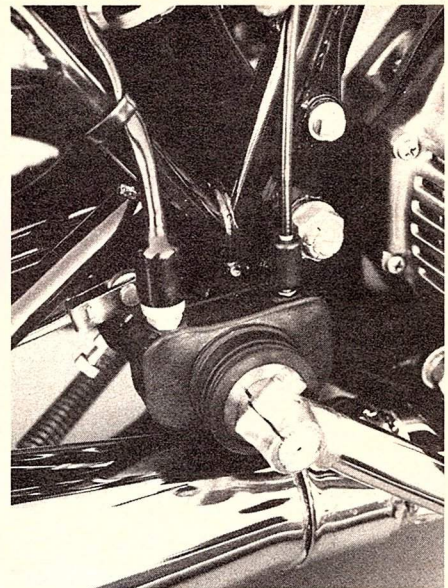
There are two pair of gears on the mainshaft and layshaft, and the rear chain drive sprocket is on the left end of the layshaft. This would constitute a straight-forward two-speed gearbox, except that in place of conventional sliding dogs to engage the free-spinning pinions to their shafts there are hydraulically-operated multi-plate clutches. The Low clutch and pinion are on the mainshaft and the Drive pair are on the layshaft. The foot-pedal lever operates a hydraulic valve, which directs pressure from the pump to the appropriate clutch, where it works against a piston to force a small stack of metallic plates together to make the gear engagement. Under full throttle at low rpm, where torque multiplication is greatest, the torque converter's stator operates a linkage to direct additional pressure to the shifting clutch so that it can't slip. Drilled passages in the case lead to sealed slip-ring



Linkage above new 24mm carbs is electric-solenoid-controlled idle speed governor for Hondamatic.



Panel in top of fuel tank hinges backward for safety and opens with ignition key for filling 5-gal. tank.



Rubber boot on rear brake lever pivot covers stop switch and cable-controlled ratchet on park brake.

carriers on the shifting clutches to transmit the engaging pressure. Petal valves in the shifting pistons allow complete dumping of oil by centrifugal force when system pressure is removed. Were it not for this hydraulic gear-engagement system, a complete conventional clutch would have to be placed in the drive train in order to shift gears, as it has in the Guzzi system.

The rear drive sprocket, chain and rear hub are the same items used on the CB750-76 (this year's version of the regular four-pipe CB750). In order to get higher load capacity and better tire life, Honda has chosen to fit the larger-profile 4.50H17 tire and rim from the GL1000 on the CB750A's hub. Although the rim size is an inch smaller in diameter than the other two Honda 750s, the fatter tire gives a greater rolling circumference than a 4.00 x 18. And the added section also gives a bigger footprint for added traction. The tire fitted is a Dunlop K-87. The new style GL1000 alloy rim is also fitted on the front wheel, and it is shod with

the tried and proven Dunlop F-6 3.50H19 rib-pattern tire. The rest of the fork and wheel assembly is virtually unchanged from the CB750F components. Both fenders are new chromium-plated steel items that are quite wide and flared at their lower extremity to shield the rider from road spray.

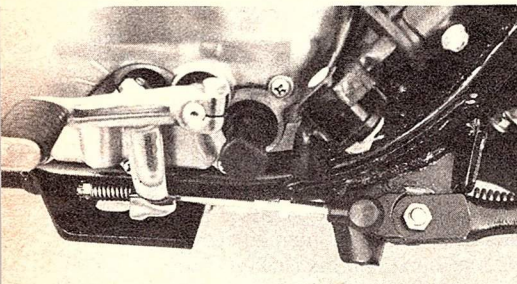
One must become accustomed to much change in the instrument cluster. Both the ignition key and choke control knob are exactly where they should be: right up there between the handlebar clamps where you can see them. No more dark-of-night fiddles to find the key hole or fumbling around to find a choke lever to push off after you are doing the speed limit and the engine is warm. Another convenience is that the key fits the switch either way, and with the handlebars turned against one of the stops a push and counter-clockwise twist of the key locks the fork in that position for parking.

In the speedometer dial, there are two bands to tell you when the engine is at its maximum permissible rpm, which occurs at

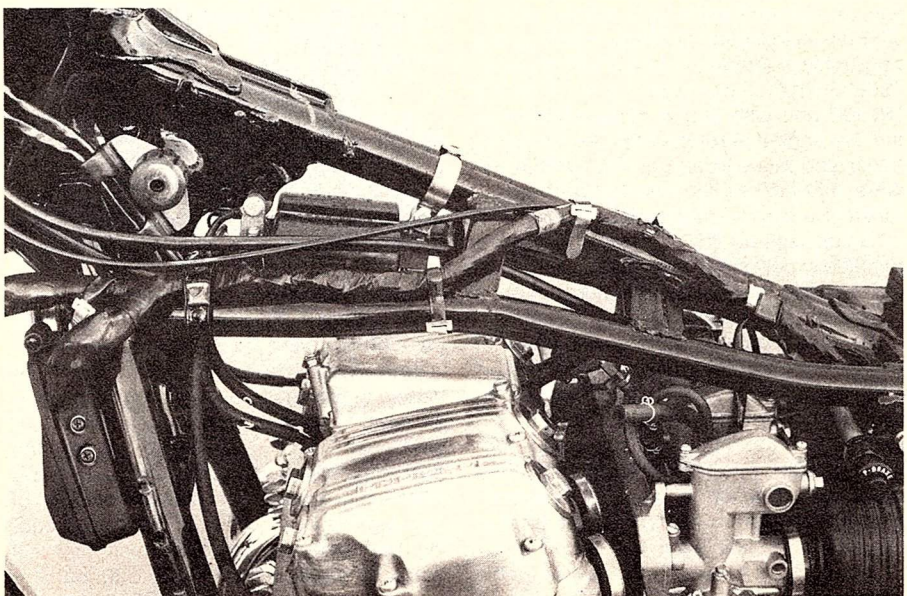
60 mph in low range and 105 mph in high. And that's all there is to tell you of engine revs: no tachometer is provided. In the round housing that looks exactly like a tach, there are a series of warning lights and an electric fuel gauge. Across the top, the three small lights tell when the high beam of the headlight is on, when the oil pressure is dangerously low, and when the parking brake is engaged. Three more lights indicate whether the gearbox is in neutral, low, or drive. The turn signal lights are on the right and left under that, and the fuel gauge is at bottom. All are easy to read, even at night, and there is no mistaking their message.

The parking brake is a little ratcheting device that locks the rear-wheel brake when a two-part knob is pulled out near the fuel valve on the left side of the bike. This feature is necessary because the gearbox automatically returns to neutral anytime the side-stand is lowered. And the fluid coupling would allow the bike to roll even if the transmission could stay in gear. As it is, the

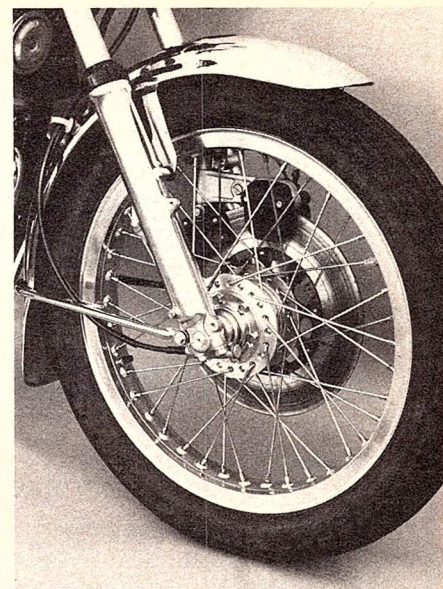
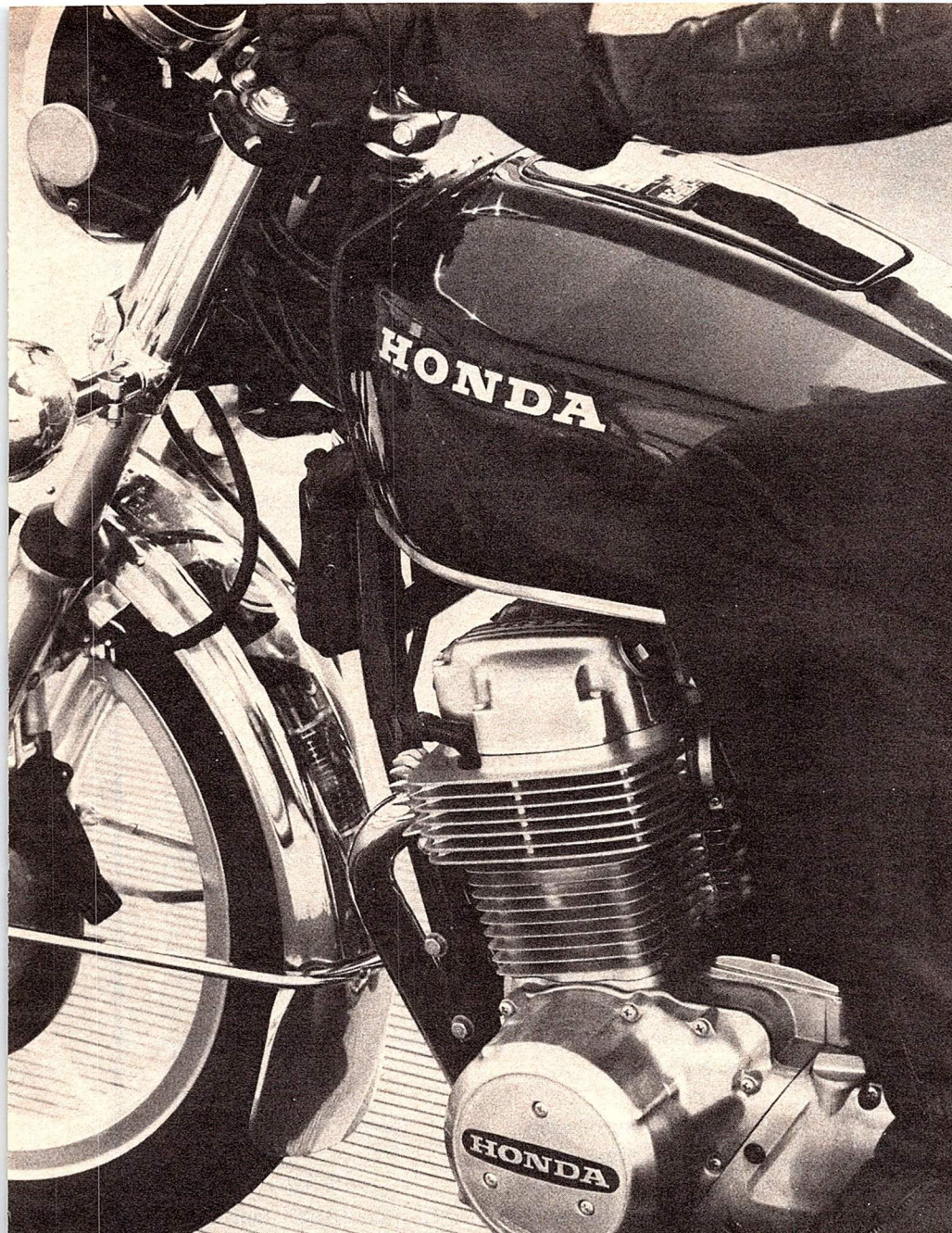
HONDA CB-750A



Linkage is for automatic neutral device when side stand is down. Emergency start lever fits on stub.



Plastic box on frame downtube holds the wiring connectors so electrical problems can be found fast.



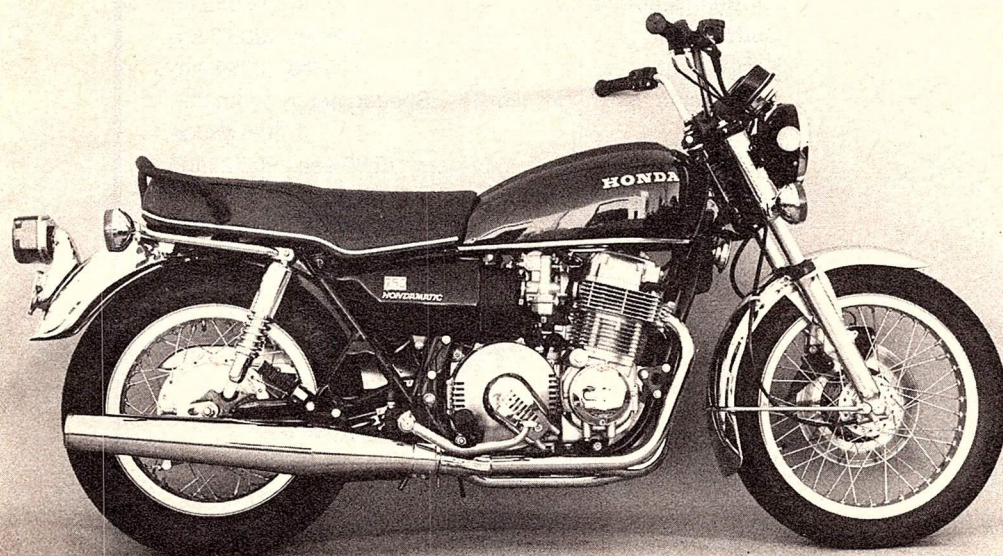
Beautiful shoulderless rims from the GL1000, and fork sliders that move easier over little bumps, are new.

machine will stay stationary, held by the rear brake, with either end pointing downhill. Pushing the center button releases the knob, and then a dab with your toe on the brake pedal releases the brake ratchet. The parking-brake warning light is there so you won't ride off with the knob pulled out and then unexpectedly find yourself being pulled down to a full stop the first time the rear brake is applied.

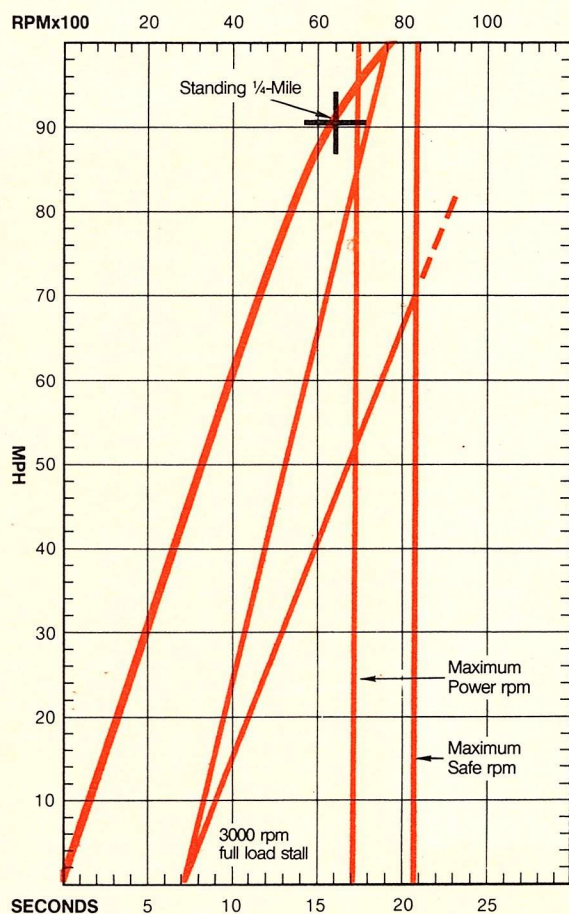
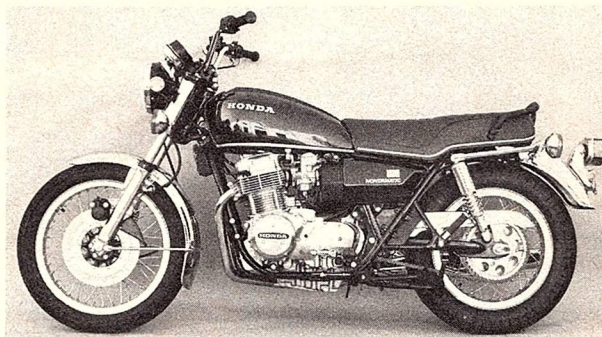
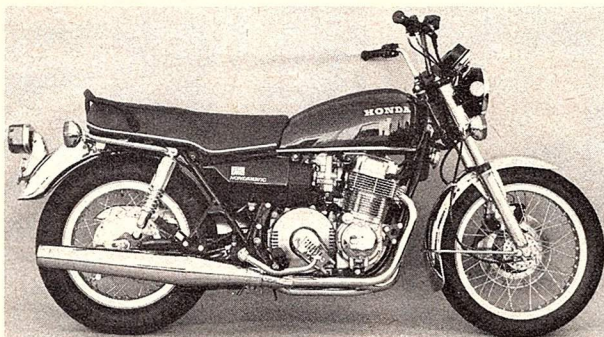
An additional safeguard connected to the sidestand linkage is one that allows the engine to be started with the sidestand down, but locks the gear control lever so it cannot be moved from its neutral position until the stand is raised. This prevents novice riders from crashing in the first left corner they reach after taking off with the stand down. Additionally, an interlock-switch prevents the starter from being actuated unless the gearbox is in the neutral position.

All Hondas have cold-natured engines, but this one is particularly so. Even on warm days full choke is required when the engine is completely cool. And on brisk mornings, several twists of the throttle to actuate the accelerator pump are required before the engine will fire up. The engine usually sputters and dies a few times before it catches and groans to life. After a couple of minutes the engine will respond to the throttle on about half-choke and low range can be selected without killing the engine. After a mile the engine will run cleanly with the choke fully returned, but a sluggish feel from the engine and buzzing vibration in the seat and footrests indicate there's still a lot of thick-oil resistance for the engine to fight. After about ten miles on a 40-degree morning, the oil thins out and the CB750A begins to run normally.

The transmission is not an automatic. If you take off in low, the transmission stays in low until you shift. If the lever is left in high, the bike takes off in high and stays there. The automatic part is the change in ratio provided by the torque converter, which gives the equivalent of an approximately 2:1 reduction ratio at stall, but eases toward a 1:1 straight-through drive as its speed rises. This



The exhaust system is similar to that of the CB750F, but has been modified for max torque at 6000 rpm.
MAY 1976



HONDA CB-750A

Price, suggested retail \$2194 West Coast
 Tire, front 3.50 x 19 Dunlop F6
 rear 4.50 x 17 Dunlop K87
 Brake, front Disc, 11.7 x 1.625 in. (29.7 x 4.12 cm)
 rear Drum, 7.1 x 1.6 in. (18 x 4 cm)
 Brake swept area 152.8 sq. in. (986 sq. cm)
 Specific brake loading 4.74 lbs./sq. in.
 (0.33 kg/sq. cm)
 Engine type Four-stroke SOHC four
 Bore and stroke 61 x 63mm (2.402 x 2.480 in.)
 Piston displacement 736cc (44.9 cu. in.)
 Compression ratio 8.6:1
 Carburetion 4; 24mm Keihin
 Air filtration Dry paper
 Ignition Battery and coil
 Rake/Trail 28°/4.5 in. (115mm)
 Mph/1000 rpm, top gear 13 (approximate)
 Fuel capacity 5.1 gal. (19.3 liters)
 Oil capacity 5.8 qts. (5.5 liters)
 Electrical power 290 watt alternator
 Battery 12V, 20AH
 Primary transmission Hy-Vo chain (1.35:1 ratio)
 Secondary transmission 5/16 x 5/8 in.
 # 530 roller chain
 Gear ratios, overall Low 8.63:1, high 5.80:1
 Wheelbase 58.3 in. (148 cm)
 Seat height 32.5 in. (82.5 cm)
 Ground clearance 7.5 in. (19.05 cm)
 Curb weight 565 lbs. (256.3 kg)
 Test weight 725 lbs. (328.9 kg)
 Instruments Speedometer, odometer,
 fuel gauge
 Standing start 1/4-mile 15.86 sec.; 90.72 mph
 Average fuel consumption 51 mpg (21.69 km/liter)
 Speedometer error 30 mph actual 32.52
 60 mph actual 57.17

assists the two transmission ratios so that acceptable acceleration and a broad speed range can be squeezed out of them.

Actually, more-than-decent acceleration is only a part of the Hondamatic's traffic capabilities. Freed of the attention required for the usual clutch and gearshift operation, a rider can concentrate on the ever-changing traffic pattern around him and make the most of its opportunities. Our initial prejudice against automatics (they didn't seem sporting) was quickly overcome during our first encounter with an automatic, the Rokon dirt bike. Riding an off-road bike fast and guiding a street machine through dense traffic present similar concentration problems. Your eyes are constantly scanning near and far to judge immediate and future problems. A mistake in deciding the trajectory of your machine can be disastrous in either situation. There's a definite gain in one's ability to concentrate, and less disturbance of the vehicle's balance, with both the Rokon Automatic and the Hondamatic.

Two other very attractive characteristics of the CB750A contribute greatly to its dense-traffic capabilities. First, there's absolutely no lash in the drive components: when the throttle is opened and closed, the bike's reaction is always fluid and very smooth. One of our on-going complaints about many Hondas (and other makes) is the decided lurch that occurs when the total driveline slack is abruptly banged against the engine or rear wheel resistance. This trait can be enormously annoying in a line of stop-and-go traffic. Second, the Hondamatic provides very strong engine braking in low range. With a maximum speed of 60 mph available in low, the system gives fantastically smooth and responsive control when you need it.

The turn-signal switch is made so that it can be pushed part-way to either side to produce a few flashes for a lane change, or pushed all the way over to a self-held position for longer periods. When in the self-held position, each flash of a signal is accompanied by a loud beep from the reminder device mounted behind the headlight.

By sporting-motorcycle standards, the Hondamatic 750's acceleration from a dead stop is poor. Even with the engine's design compromises, which increase low rpm torque, and with the converter's maximum multiplication ratio of about 2:1, there simply isn't enough force available at the wheel to accelerate at a brisk rate. But acceleration performance in the real world of traffic is not as bad as the dragstrip figures might suggest. Once the engine is revving within its efficient range, acceleration is actually quite good. The 30- to 70-mph times for the CB750A and the CB750-76 are much closer than the quarter-mile times indicate.

Looking at the performance of even the fastest new cars puts the CB750A in an entirely different perspective. This year's stock Corvettes with four-speed manual gearboxes run the quarter-mile in the mid-to-low 15s at just over 90 mph. The CB750A (15.86 seconds at 90.72 mph) is quick enough from a dead stop to zap the four-wheeled herd and allow several lane changes within a block, if necessary. And when rolling along with a stream of cars, the Honda can accelerate hard enough to do

The Hondamatic Torque Converter

• The Hondamatic hydrokinetic torque converting device has the same basic design as those found in many standard automobiles, and is practically identical to the one in the Moto-Guzzi V-1000 described in *Cycle*, March '76. Actually, the motorcycle torque converter is the same as was fitted to Honda's domestic-model N600 cars, and very similar to the one on the present Civic automatic.

The converter is a three element assembly in a single toroidal housing. The part driven by the engine is a centrifugal hydraulic pump, which throws oil at the turbine wheel, which drives the gearbox shaft. This works the same way as when you have a stream of water hitting the vanes of a mill wheel. But the many streams of oil from the vanes of the pump hit all the vanes of the turbine at the same time. After imparting the bulk of its energy to the turbine vanes, the oil is forced by the curved housing wall back down to the center of the turbine. There the oil encounters a third wheel, whose function is to catch streams of oil returning from the turbine in its cup-shaped vanes and deflect them back toward the pump's hub at the right attack angle and with minimum energy loss. This third wheel is called the stator.

The amount of torque multiplication is governed by the maximum speed differential allowed to exist by the angle of the vanes in the turbine and the kinetics of fluid flow. The maximum torque multiplication of this system is about 2:1 and occurs at "stall", when the engine is straining against the load of the pump but the turbine has not yet begun to turn.

As the pump rotor drags the turbine along in its wake, the torque multiplication decreases in proportion to the increase in speed of the turbine. When the turbine speed rises to 95-percent of the pump speed, the torque multiplication is zero.

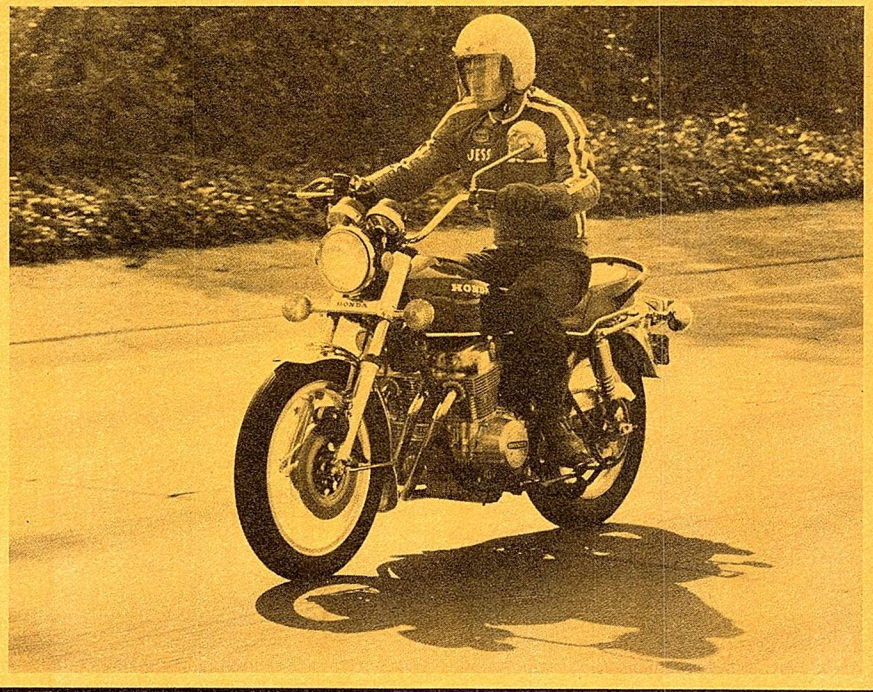
Were it not for the necessity of cooling the oil in the converter, it would operate perfectly well as a sealed oil-filled unit. Since hydraulically-controlled shifting was chosen, Honda's engineers neatly combined the engine lubrication oil, hydraulic shifting oil, and converter cooling oil together in a common pool. The engine has enough cooling area to dissipate what heat the finned aluminum converter housing can't get rid of for itself.

The oil pump which supplies pressure to the shifting circuit has its output controlled by a spring-loaded regulator valve. A unique feature of the Hondamatic system is that it has an arm attached to the converter stator to override the relief valve at stall and supply extra pressure to the shifting clutches to prevent slipping. Cooling oil circulated through the converter is that which is the excess valved away from the shifting circuit by the system's pressure regulator.

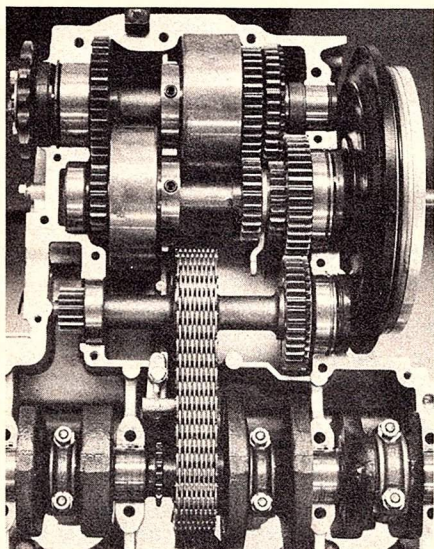
When an upshift is made, the feel to the rider is extremely smooth. Even at full throttle, there are no jerks or lurches. But the blend in speed change is tight: the engine does not rev for an indecisive moment as many automotive units do. There are no overrides in the system. When the lever is pushed down, the gearbox is going to shift. And if the bike is above the low-range rpm limit when the downshift is made, the rear wheel is going to hop up and down or slide in protest. One wouldn't want to downshift while negotiating a fast curve at high speed.

A regular whirring sound can be heard from the converter when the bike is at rest, particularly if the oil is cold. On the highway, the only sounds come from the exhaust pipe and the rear chain. There is decidedly less noise than comes from the standard five-speed transmission.

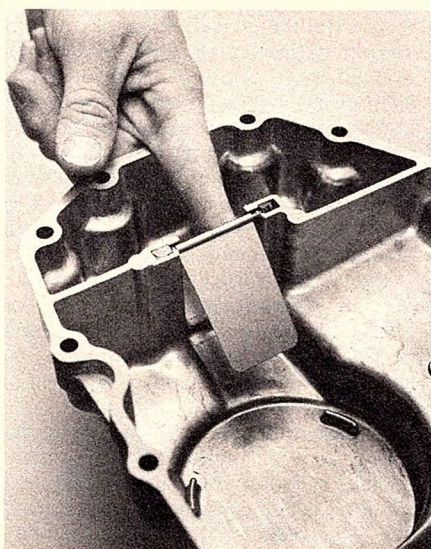
—Jess Thomas



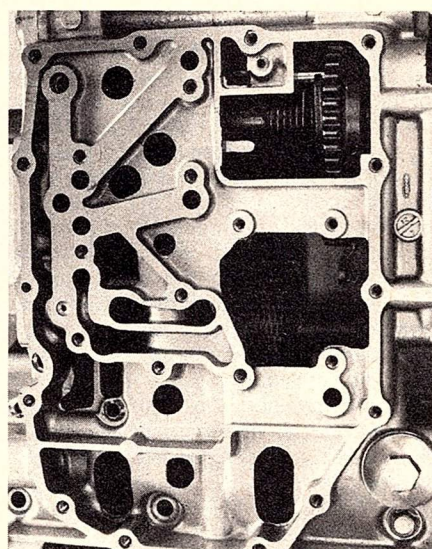
HONDA CB-750A



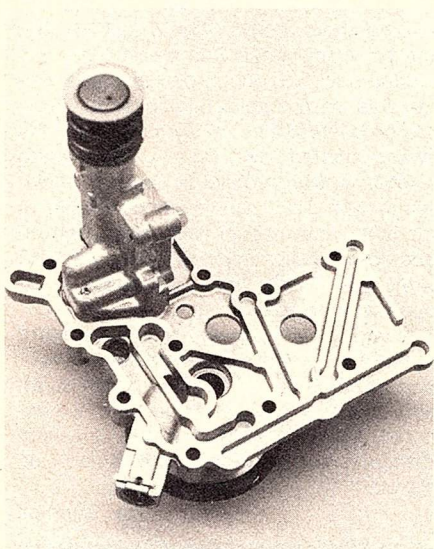
Removed bottom case reveals Hy-Vo primary chain and hydraulic shifting clutches on gearbox shafts.



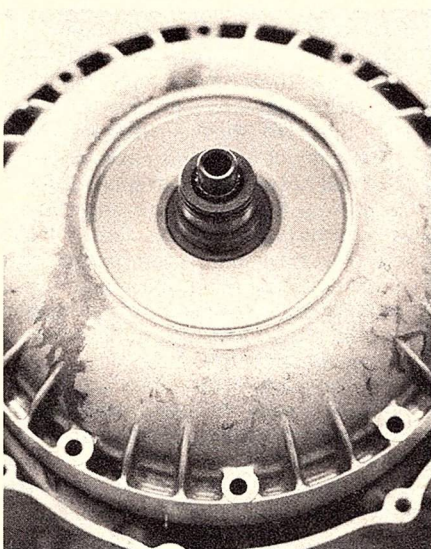
This one-way valve in the oil sump prevents surges from robbing oil pickup at the pump during braking.



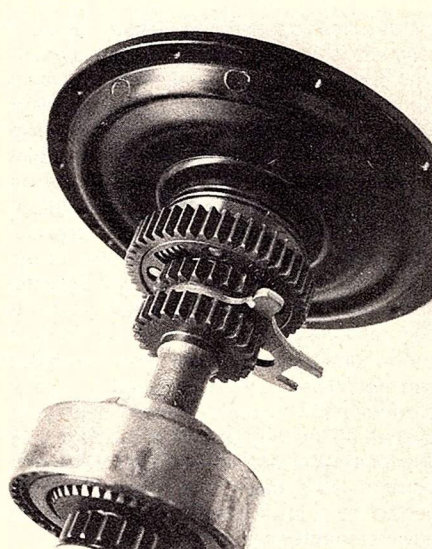
Under sump and pressure-control covers are passages from pumps to clutches and engine galleries.



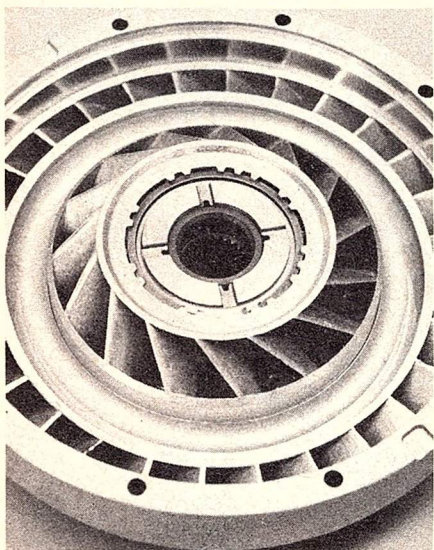
Distribution cover houses strainer for pump pickup, engine pressure relief valve, and gearbox relief.



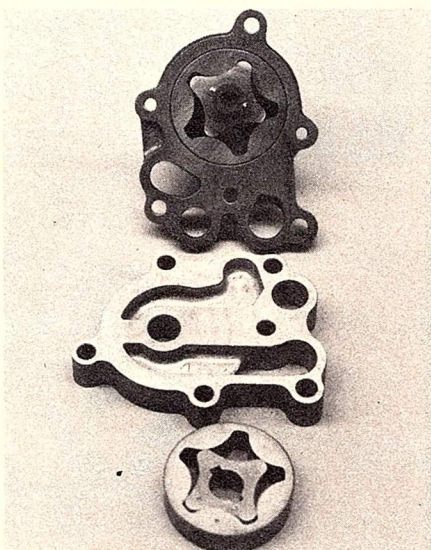
The converter cover is removed to show toroidal turbine housing. Cooling oil passes through shaft.



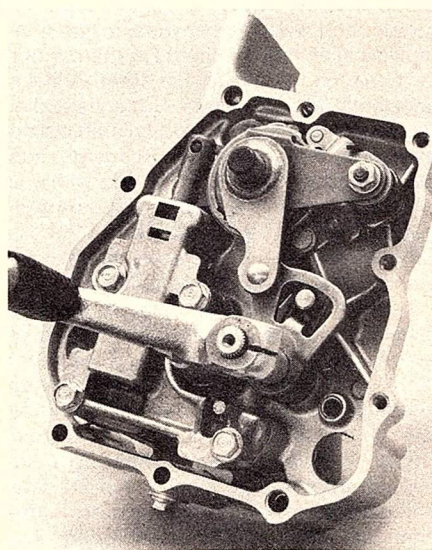
Gearbox mainshaft shows detail on shifting clutch, stator reaction arm, and sprung converter gear.



Outer turbine, with torque-multiplying stator lying in place, is driven half of Hondamatic converter.



Dual-chamber trochoid pump with flow-control panel supplies pressure for engine and Hondamatic.



Gear shift control lever actuates a simple, three-position hydraulic control valve for shift clutches.

any kind of maneuver desired within the bounds of legality and rider experience.

Both the rear shocks and front fork have spring compression rates and rebound damping that are set to the stiff side of just right. The settings give extremely accurate steering and oscillation-free ride stability, even during hard cornering at moderately high speeds. Ordinarily, firm springing and damping are synonymous with very uncomfortable riding on highways that are laced with expansion seams. The slight bumps caused by the seams aren't emphatic enough to overcome the initial friction between the fork tubes and sliders. Marked improvement in slider bearing material on the CB750A allows them to react sufficiently to small bumps, and as a result, the Automatic's ride is firm but comfortable.

With steering geometry almost identical to the CB750F's, the A has about an inch more trail than the older CBs. The result is more positive self-alignment, as opposed to the quick-turn oversteer feeling common to earlier 750s. This extra trail contributes greatly

to the high-speed stability we noticed, and allows the bike to ride across a row of lane divider mounds on the freeway without attempting to dive quickly to either side.

The CB750A has really great cornering clearance. A concerted effort to raise the brake lever, side stand, footrests, and exhaust collector has resulted in greater maximum lean angles than even the cafe-racer CB750F. Metal feelers on the ends of the footrests are designed to touch the pavement first during hard cornering to warn the rider that he is getting close to hanging up something immovable. Even with the rear shocks set at their full-down spring load position, the A must be leaned over an amazing amount before the footrests drag.

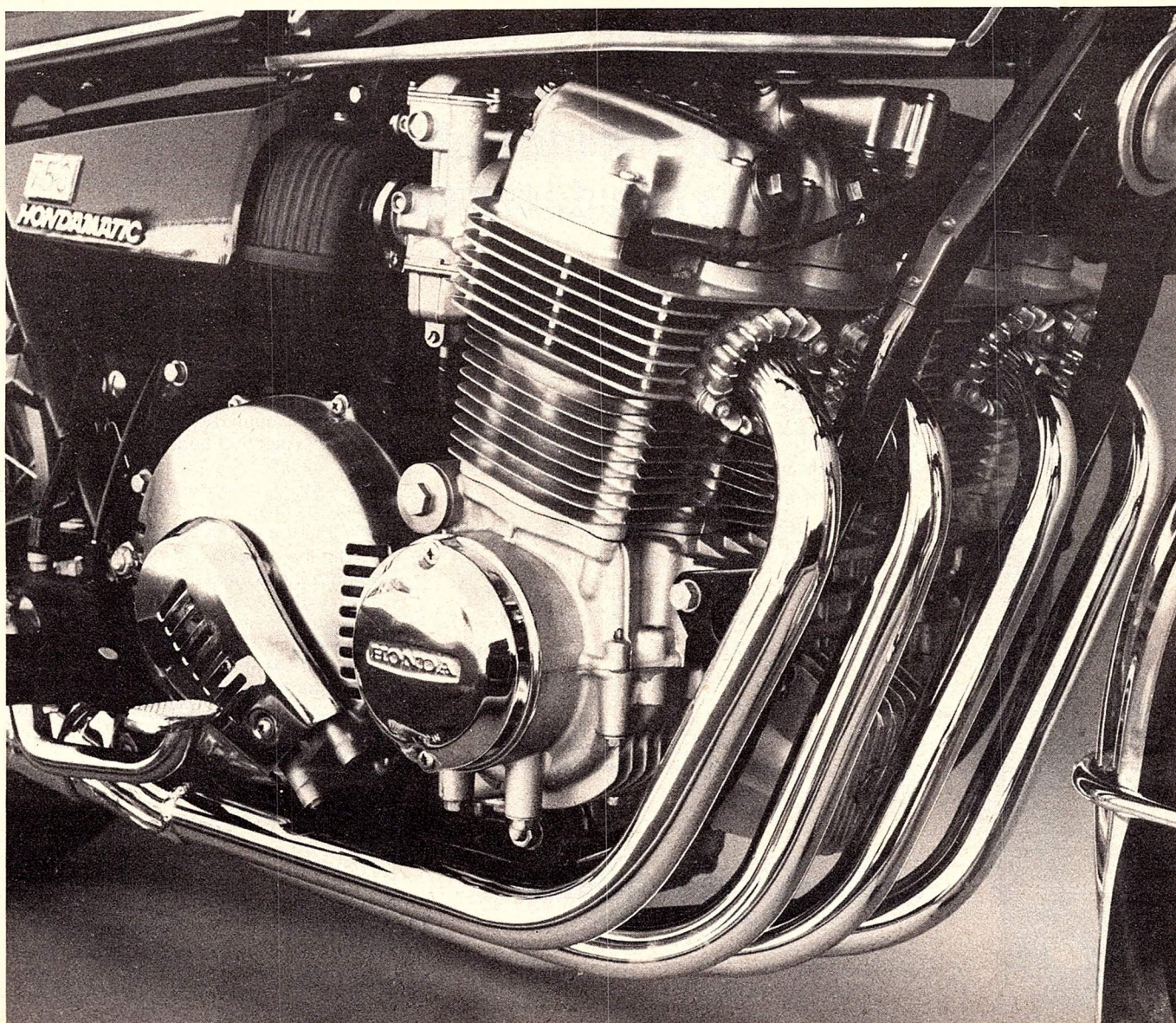
With the pegs mounted high for maximum clearance and the seat height left at 32.5 inches, the seat-to-footrest distance is on the cramped side for taller riders. It's fine for fast, spirited blasts, but can cause leg cramps during extended touring rides.

A good compromise between firmness and conformability was made in the choice

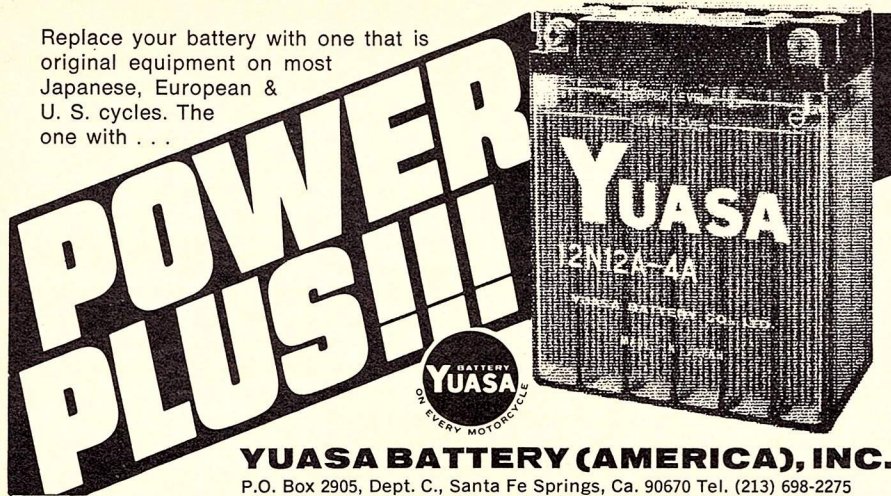
of seat padding, and the rider's portion of the saddle is nicely rounded for the proper thigh clearance. The seat is moderately comfortable for long trips, but nothing extraordinary. One extremely nice feature of the seat is the thickly padded grab rail which surrounds the passenger portion.

We would have predicted that fuel economy would be poor with the Hondamatic, but the reigning geniuses of engine-building have pulled off another hat trick: the worst mileage we got was 46.8 mpg. And freeway cruising produced a sparkling 55.7 mpg.

The CB750A is a long first step toward a motorcycle that appeals to people who perhaps would never have otherwise been drawn to the sport. These people just might not have any interest in conquering a truculent machine or leaving a great deal of public notice in their wake. Where conventional motorcycles are still characterized by rough transitions of all kinds, the Hondamatic glides and blends and whirs—without ever, for a second, letting its rider forget that it is indeed a motorcycle. ●



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GASKET FIX Continued from page 46

excellent gasket surface is also obtained by treating the cleaned aluminum surface with DuPont Alumiprep. This product is sold in auto body and paint supply shops as a treatment for aluminum prior to painting. Alumiprep chemically etches the surface for better adhesion of paints and adhesives such as the silicon RTV.

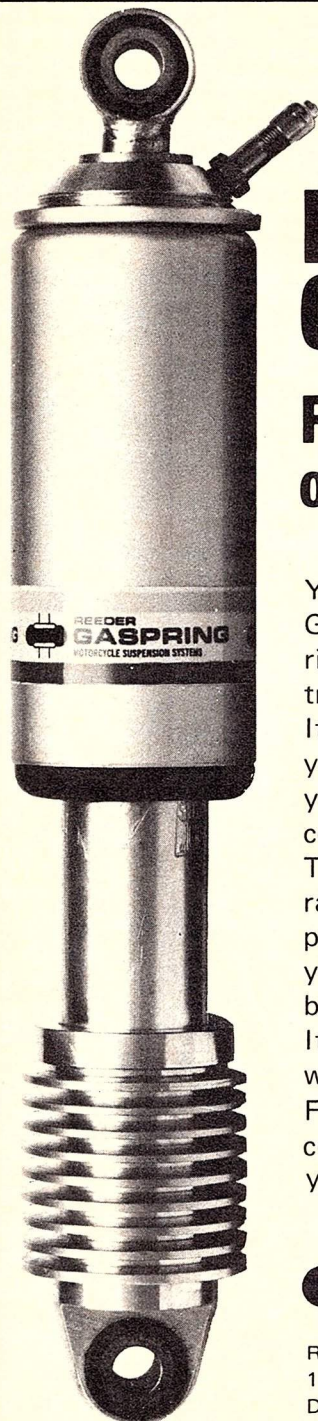
After all surfaces are clean, they should be blown dry with an air hose. Before starting reassembly, the gasket surfaces should be wiped with a clean rag soaked in lacquer thinner or acetone. This removes residual oil smudges and allows the sealer direct contact with the roughed-up aluminum. As a side note, there is another related product available from General Electric called SS 4004 Silicon Primer. When applied to cleaned surfaces at this stage and allowed to air-dry for an hour, it allows such a strong bond with the RTV that later separation of the parts would be extremely difficult. The primer should be used on parts that you want almost permanently bonded together, such as special shock absorber instrument mounts and the like.

In *Cycle Magazine's* experience, the best sealer to use with composition gaskets is General Electric RTV-106 Silicone Seal. A similar product to number 106 (red) is sold in auto parts stores under the name Hi-Temp Instant Gasket. Regular Instant Gasket and the other G.E. RTVs won't work under high heat conditions. The Hi-Temp Instant Gasket works well on many gaskets, but we haven't had the 100 percent success with it that we have had with the 106.

Apply the RTV to both sides of the gasket at the same time by coating the thumb and fingers with the sealer and smearing on an even coat. Cover the gasket surfaces completely; you shouldn't be able to see any of the black or metal parts of the gasket. Any extra sealer will squeeze to the outside and form a protective bead. This sealer has been used for a year on *Cycle's* XL-350 dirt bike, and there's never been any problem caused by the small amount that gets into the combustion chamber itself.

With the gasket coated, reassemble the head in the normal manner and torque it down to the recommended specifications. It's a good idea to remove the O-ring from the cam cover and clean and coat it with RTV 106. There are two small tits on the O-ring which correspond to slots in the cover; these make assembly quick and easy when the ring is covered with a layer of the red goo. After reassembly, allow the RTV to cure overnight before starting the engine.

The seal stopped the leakage problem in the Gentleman's Express. Not only does the 106 RTV seal extraordinarily well, but it is also easy to get off when the engine is worked on again. When soaked in mineral solvent or gasoline, the RTV peels off readily. And don't worry about your red-silicone-coated hands—a shop rag lightly coated with solvent will clean them up in a jiffy. ●



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THE COMPLETELY NEW YAMAHA XS750.

It has the smoothness of shaft drive,
the performance of a four-stroke 750cc triple,
and the advanced engineering of a
totally new kind of big motorcycle.



CIRCLE NO. 29 ON READER SERVICE PAGE.

A new kind of big motorcycle.

The new Yamaha XS750. It's not just another large motorcycle that's too big, nor is it just a fast, one-dimensional speed machine.

Rather, the new Yamaha XS750 is one of the very few large motorcycles currently available that's been engineered and designed, from the frame up, for the experienced enthusiast who demands a well-powered, incredibly smooth operating machine for touring, commuting, and the pure pleasure of riding.

The DOHC four-stroke triple.

The XS750's engine is the first element of this machine's uniqueness. It's a dual overhead cam three cylinder four-stroke engine. This transversely-mounted triple displaces 747 cubic centimeters with a 68mm bore and a 68.6mm stroke. The long stroke provides a high degree of low end torque, for acceleration and cruising. Yet the engine revs easily and develops a remarkable amount of useable horsepower. And each of the cylinders is efficiently

own 34mm constant velocity Mikuni carburetor. The engine runs with incredible smoothness because of the 120° crankshaft configuration (see illustration). And the crankcase is equipped with a Positive Crankcase Ventilation System to keep blow-by gases within the engine.

The shaft drive.

Certainly the shaft drive is the kind of feature which sets a motorcycle in a totally different class. And for good reason. The XS750's shaft drive, coupled with the powerful DOHC triple, makes this motorcycle's

performance
incredibly

Dual Overhead Cams

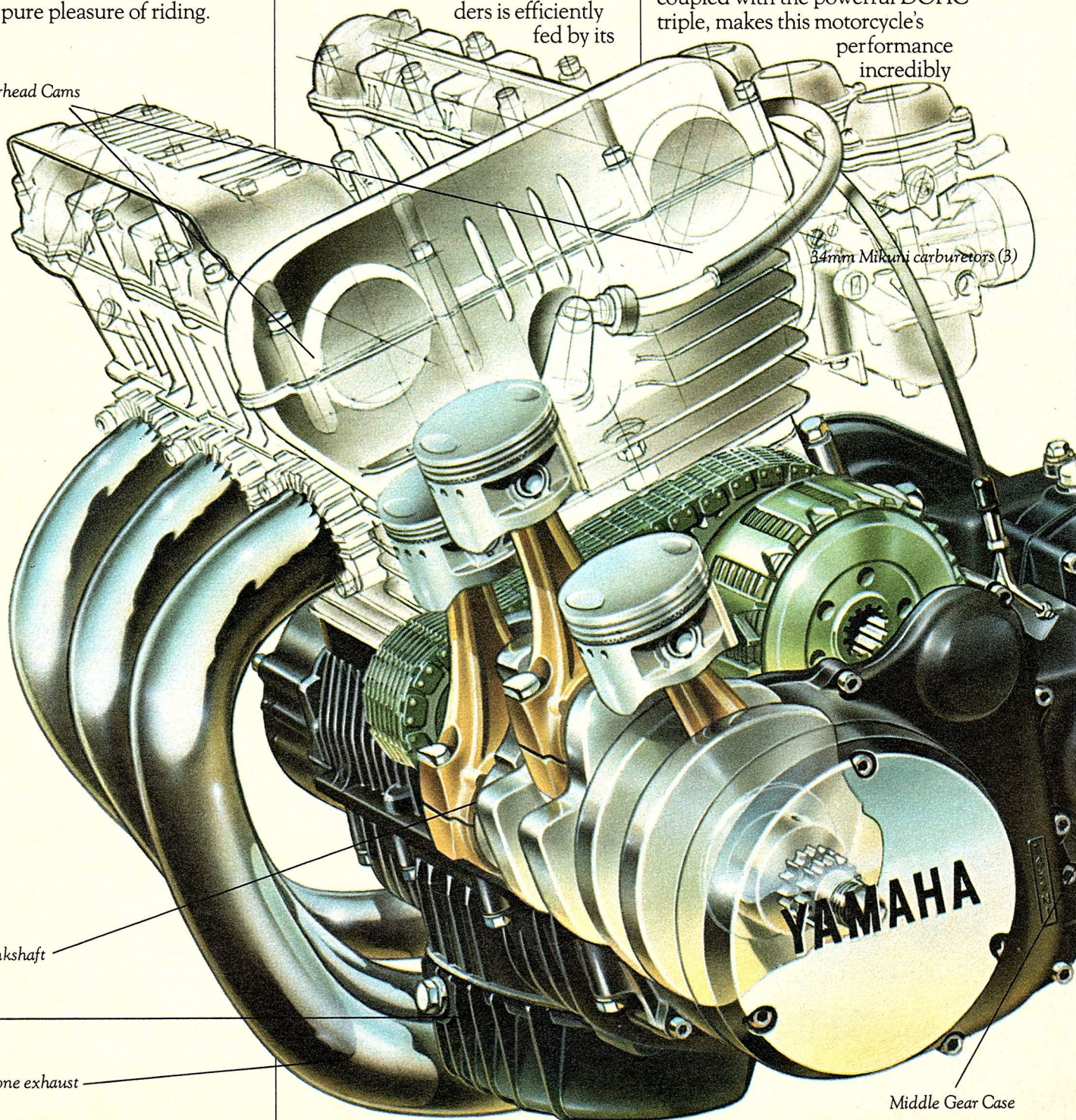
34mm Mikuni carburetors (3)

120° Crankshaft

Oil Filter

Three-in-one exhaust

Middle Gear Case



smooth. The shaft itself is fully enclosed so that no drive-line part is exposed, which makes the XS750's maintenance almost trouble free.

The drive-train's performance.

The performance of this transversely-mounted shaft drive DOHC triple is unlike most other motorcycles. The engine's evenly developed horsepower is transferred with minimum vibration directly to the rear wheel. The entire operation of powering the rear wheel is smoother than a chain, easier to maintain, and more mechanically precise. Since the crankshaft is transversely-mounted there is no torque reaction that's common to other shaft drive motorcycles. In essence, the new Yamaha XS750 offers the proven advantages of shaft drive without excess weight or bulk normally associated with this type of drive-train.

Suspension and brakes.

The XS750's chassis, designed for this shaft-driven triple, is a modified duplex cradle for extra rigidity. The rake and trail of the front fork are positioned for

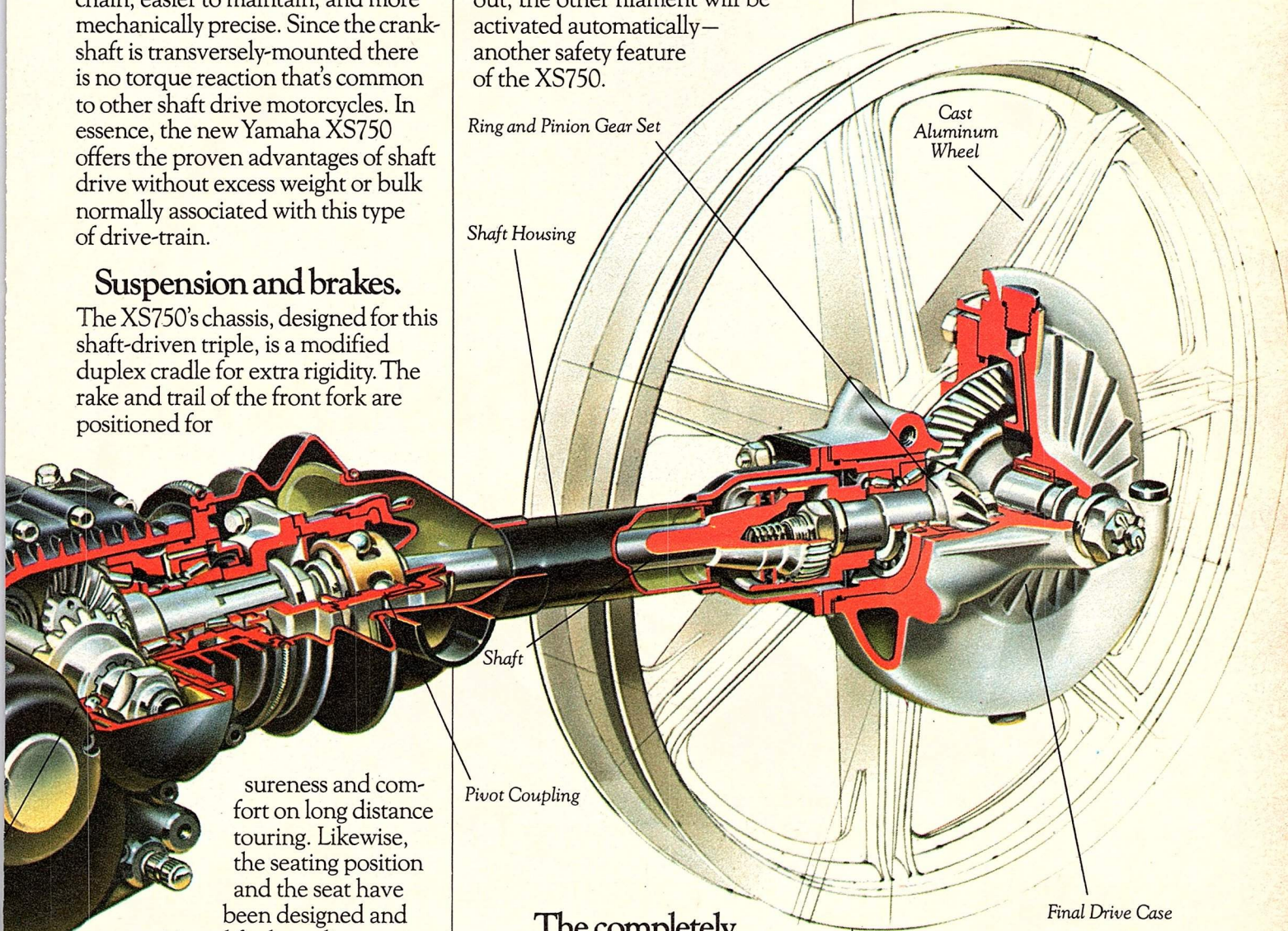
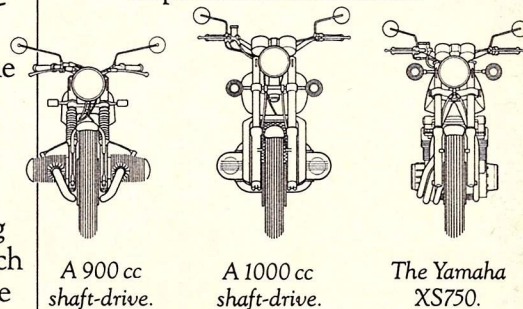
sureness and comfort on long distance touring. Likewise, the seating position and the seat have been designed and positioned for long distance comfort.

The XS750's braking is completely hydraulic disc, with a twin disc configuration on the front. And the front disc calipers are mounted behind the fork tubes, so they have little or no affect on steering. The rear disc is mounted opposite the shaft drive for balance.

A thoroughly revolutionary machine.

The details of the XS750 are proof of expert design and advanced technology from Yamaha. The cast aluminum alloy wheels for example. The XS750 is one of the few production motorcycles with mag-type wheels. They improve the appearance, and also provide easy maintenance. The XS750 also has automatic cancelling turn signals, a safety innovation which turns off a signal after an appropriate lapse of time or distance traveled. And if the headlight filament burns out, the other filament will be activated automatically — another safety feature of the XS750.

Width:
If a motorcycle didn't have to lean into turns, width would not be an important consideration.



The completely new XS750.

Perhaps the best way to describe the engineering breakthrough of the XS750 is this: it is one of the very few

shaft-driven motorcycles that still retains the true feeling of a motorcycle. The best way to experience the new XS750 is to ride one.

When you know how they're built, you'll buy a Yamaha.

CIRCLE NO. 29 ON READER SERVICE PAGE.

Winston Box fits more than my pocket.

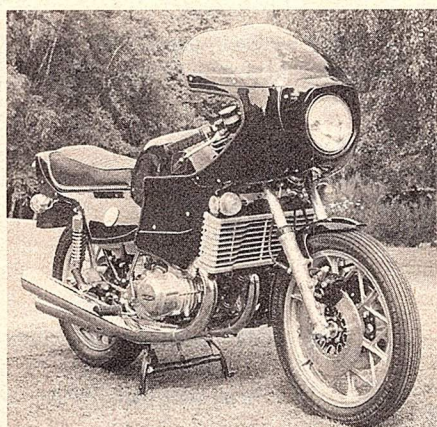
Winston Box fits the way I live. It goes where I go. So the taste I want always goes with me. A lot of cigarettes come in a box, but only one has real taste. For me, Winston is for real.

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

20 mg. "tar", 1.3 mg. nicotine av. per cigarette, FTC Report SEPT. '75.

Got Some Whip-It-Out Handy?

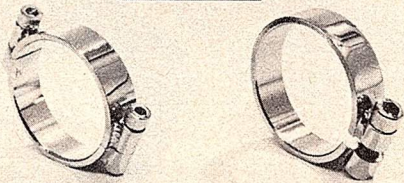
Dunstall/Suzuki: Whilst maintaining his complete line of cafe accessories for the bikes which made him famous, Paul Dunstall has turned his attention to the Suzuki 380, 550 and 750 triples. Herewith, a Suzook 750 with Dunstall's fairing, tank, seat/sidecover



assembly, front fender, handlebars, etc. If you want to flash-up your water-cooled, 380 or 550, contact one of Dunstall's regular US distributors—Full House Eastern Motor Sports, Fox or Wheelsport or write to 3355 Capstan Drive, Laguna Niguel, Calif. 92677.

CIRCLE NO. 1 READERS SERVICE PAGE

Clamp-o-Rama: Santee Industries has just announced custom-styled intake and exhaust clamps to its line of after-market accessories. The clamps, which come in sets of two or four, are triple-nickel chrome finished, and are secured by chrome allen-



head bolts, fit Honda 750 exhaust ports, HD Panhead and Sportster exhaust ports and most HD intake manifolds. The sets range in price from \$14.95 to \$29.50. Contact Santee's Marketing Division, 651 Arroyo Avenue, San Fernando, California 91340

CIRCLE NO. 2 READERS SERVICE PAGE

MAY 1976

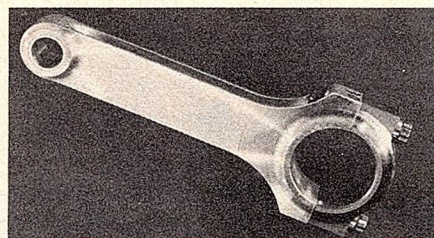
Sickle Tools: Joe Haile Engineering is now stocking a selection of motorcycle tools that may be of service to both pro mechanics and do-it-yourselfers. He has a valve spring compressor that can be worked with one hand and comes with an assortment of jaws; a very trick carbon scraper that conforms to the surface being scraped; a flex-hose compression tester that comes with adaptors for spark plug holes of two different sizes; a



pocket magnet; a ring compressor complete with an assortment of bands to accommodate pistons ranging in size from 2 7/8-in. to 6-in.; and a spark plug/ignition points gauge with blades of Swedish steel and calibrations in both inches and meters. Write to Joe Haile at 4824 Arcola Ave., No. Hollywood, Calif. 91601, or call 213-763-4514. Catalogues are available for a buck, refundable with your first order.

CIRCLE NO. 3 READERS SERVICE PAGE

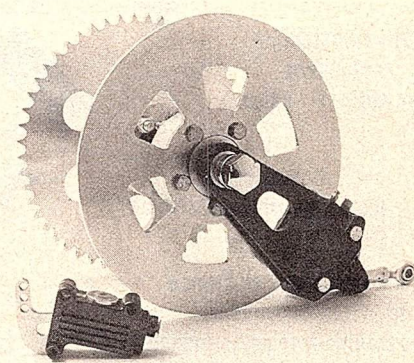
... and More SuperRods: These come from Sonny Routt, one of Triumph's strongest and most loyal allies. Routt's rods are made by Warren Machine, a company that makes rods for Indy cars and dragsters. The main section of the rod is fabricated from 7075



aluminum; the cap is machined from forged steel. Racing rod bolts are included. Rod assembly weighs only 415 grams—engine rebalancing isn't necessary. Write to Routt's Cycle Center, 4633 42nd Place Dep't. 6, Hyattsville, Md. 20781 or call 301-779-3330.

CIRCLE NO. 4 READERS SERVICE PAGE

Brake Business: Performance Machine has just announced its all-new single-action rear disc brake system. Included for \$185.00 and designed for the HD 74 are a Hurst-Air-heart caliper and an 11-in. by 5/16-in. cast mehanite rotor. If you want to use the system on another bike, or prefer to use Perfor-



mance's own master cylinder, add another \$35 to the price of the kit. Available for stock HD and Honda 750 SS hubs, and for all mag and custom spoke wheels. Write to Performance Machine at 16248 Minnesota, Paramount, Calif. 90723.

CIRCLE NO. 5 READERS SERVICE PAGE

SuperRods: For the man with power on his mind and a good ol' Triumph under his cheeks, Bruce Shively now offers these strong, light, forged aluminum (2014) connecting rods heat-treated to a T-6 condition. Rod bolts are rated at 190,000 PSI; threads



are rolled. The rods come in two lengths: 6-in. and 6 1/2-in. on centers. Price \$150.00 without bearings, \$158.00 with. Call Bruce Shively at 213-447-5495 or write to him at 858 W. Duarte Road, Monrovia, Calif. 91016.

CIRCLE NO. 6 READERS SERVICE PAGE

(Continued on page 81)

KONI - WORLD'S FASTEST CYCLE SHOCK!

The KONI internally adjustable shock absorber is an engineering triumph that represents proven principles of hydraulics. The same quality is employed in the manufacture of these shocks as that used by the world's motorcycle speed record holder.*

A simple adjustment eliminates the need for installation of costly parts or the time-consuming operation of changing oil to another viscosity. Winning bikes in road races, moto-cross and enduros substantiate the stamina and performance of KONIs!

Internal adjustability — rebound forces can be set to meet riders' preference for all types of terrain without adding parts or changing oil.

All KONI shocks are dyno tested.

Rebound forces controlled by unique system of orifices and spring-loaded by-pass valve no need to depend on oil viscosity.

360° heliarc welded eyes for maximum strength have sleeved bushings to accept different mounting studs.

High quality induction hardened steel piston rod chrome plated to an ultra hard finish.

Individually calibrated foot valve controls "bump" force (damping).

Adjustable lower spring platform.

KONI adjustability is standard not an optional "extra."

All moving parts machined from solid stock.

Consistently close clearance of piston to cylinder insures trouble-free performance.

Guide is intricately drilled for maximum flow and circulation of fluid before final finish.

To guarantee precision roundness and strength inner cylinder is drawn from seamless tubing.

Also available in finned aluminum models.

*Don Vesco and crew with the KONI-equipped twin-engined Yamaha Streamliner that set AMA land speed record of 303.812 mph and FIM mark of 302.928 mph at Bonneville Salt Flats, September 28, 1975.



Photo: Dave Friedman

For free descriptive literature, decals and list of distributors write:

BIKONI LIMITED • 150 GREEN STREET • HACKENSACK, NEW JERSEY 07601
CIRCLE NO. 32 ON READER SERVICE PAGE.

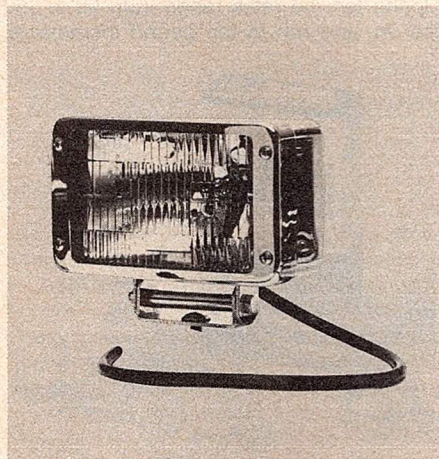
Clean-All Spray: Presented as a spark plug and electrical cleaner, Petrochem's Spray Klean has a thousand-and-one uses in any garage or shop. *Cycle's* staffers have been using Petrochem's spray cleaner for years to cut oil, grease and crud from bearings, gear parts, small casting recesses, nuts and bolts (prior to applying locking sealants), gasket surfaces, carburetor parts and every imaginable part on a motorcycle or in a tool box.



The magic liquid sprays on any surface and removes most any petroleum-base product, glues, or undesirable film. Dries quickly without leaving oily film. A must for every mechanic. Available from your dealer. Retail cost is around \$2.00. Information available from Ashland Chemical Co., Specialty Products, 10505 S. Painter Ave., Santa Fe Springs, CA 90607.

CIRCLE NO. 7 READERS SERVICE PAGE

Super Lights: A beneficial aid for street riders are National Cycle's Super Nova headlights for improved night visibility. Model # N925C 12 has a double filament bulb, hi-beam indicator and adjustable stud mount. Claimed light output is 35,000 to 45,000 candlepower. N929C 12 is a single filament light with adjustable mount and a



claimed output of 45,000 cp. For conversion of these square lights into standard 5 3/4 inch round shells, model N927C 12 had dual beams and conversion changeover brackets. The lights are said to be legal in all states. Suggested list price is \$29.95 for all models. Available from your dealer or write to National Cycle, Inc., 136 S. Eighth Ave., Maywood, Ill. 60153.

CIRCLE NO. 8 READERS SERVICE PAGE

Enduro Pegs: The unpredictable elements encountered in cross-country riding often give dirt riders adhesion problems with stock foot pegs. Circle Industries' Enduro Pegs prevent boot sole slippage caused by water, mud, sand, rocks, etc. These lightweight pegs are sharply serrated on the upper side for sole traction, mount at a 45° angle for



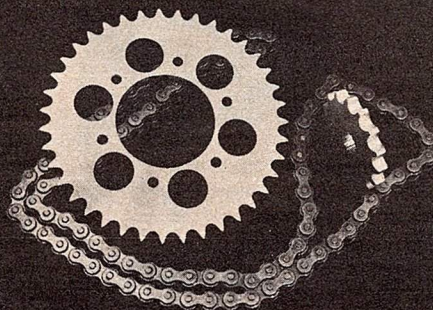
folding mounts and weigh only one pound. Made of quality steel, the Enduro pegs are available for Yamaha, Honda, Suzuki and Kawasaki motorcycles for \$5.95 or \$6.95 per pair. Universal blanks available for \$2.95 a pair. Available from your dealer or write to Circle Industries, 17901 Arenth Ave., City of Industry, CA 91748 for information.

CIRCLE NO. 9 READERS SERVICE PAGE

(Continued on page 82)

CIRCLE INDUSTRIES Complete Chain and Sprocket Kits

Chain and sprockets work together, wear together *and* should be replaced at the same time. Replacing one and not the other may damage the new part or cause premature horsepower loss. CIRCLE INDUSTRIES provides complete replacement kits in one convenient package.



CIRCLE INDUSTRIES chain and sprocket kits are available in three combinations:

- Standard** stock sizes of aluminum rear wheel and steel countershaft sprockets plus correct length of chain and one master link
- High Performance** greater strength chain and better gearing for more service, endurance, and durability
- Heavy Duty** to convert your street bike to heavy duty #60 sprockets and chain.



CIRCLE INDUSTRIES

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If you own a bike you already know a lot about adventure. If your bike is a Honda you probably feel your adventures are something special, something hard to describe. Let the Honda Wing describe it for you. It's something special too. It's not really a piece of jewelry... it's a piece of sculpture you wear. We make it especially for Honda bikers in any size; in solid sterling silver for only \$37.00 including postage. Send for yours today!

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NEWSLINE..... Continued from page 81

Shock Springs: Back end getting soft? Maybe it's time for new shock absorber springs to replace your tired old coils. Ken Ross's new line of Super Springs might well be the answer for you. Ross's springs are pre-set in matched pairs and shot-peened. Spring tension rates range from 50 to 150 lbs./in. and run in ten pound increments.



Dual-rate 60/90 and 90/120 lbs./in. springs also available. Four different lengths available to mate with Koni, Girling, Telesco, Arnaco, Betor, Boge, S&W and DT & RT Yamaha damper bodies. Suggested list is \$17.95 per pair. Information available from Ken Ross Inc., Route 2, Box 1240, Rockwall, TX 75087.

CIRCLE NO. 10 READERS SERVICE PAGE

Race Chair: Tired of standing while waiting for your favorite racer, hubby or friend to come by? Need a well-deserved rest between motos or heats? KRW Helmets has the answer for your tired dogs—their Race Chair. Made of lightweight aluminum tubing,



the KRW chair uses heavy canvas for the seat and back rest. Folds flat into a compact easy-to-carry package and is lettered with gold KRW initials. Weighs only four pounds and is available from KRW Helmets, 3170 Airway Ave., Costa Mesa, CA 92626 for \$15.95.

CIRCLE NO. 11 READERS SERVICE PAGE

Denco Kawasaki

NEW TRACK PROVEN

ZI-900

TOTAL

SCAVANGE PIPES

- Equal length head pipes
- Triple cone megaphone design
- 25% Power increase
- Total service accessibility without removing pipes.
- Complete heliarc construction

Performance beyond comparison. Sets the standards for power and quality on the Z-1.

Send \$2.00 for Complete Catalog!

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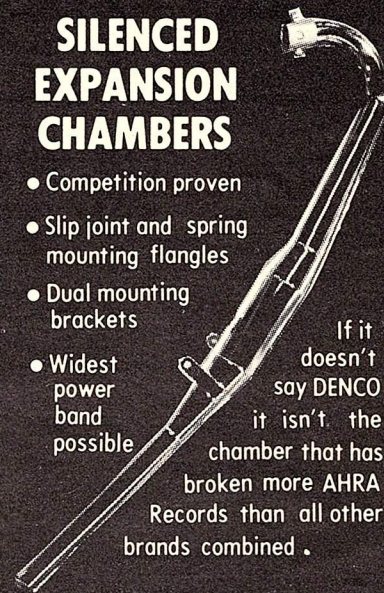
HIGH PERFORMANCE PARTS

"Home of the worlds fastest triples"
including the 9 Second Pro-Bike

**SILENCED
EXPANSION
CHAMBERS**

- Competition proven
- Slip joint and spring mounting flanges
- Dual mounting brackets
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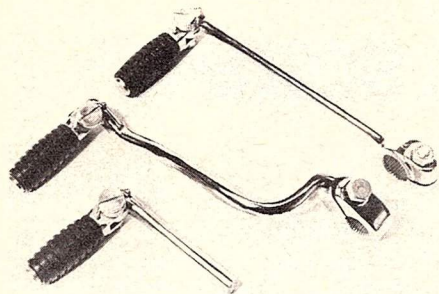
If it
doesn't
say DENCO
it isn't the
chamber that has
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Records than all other
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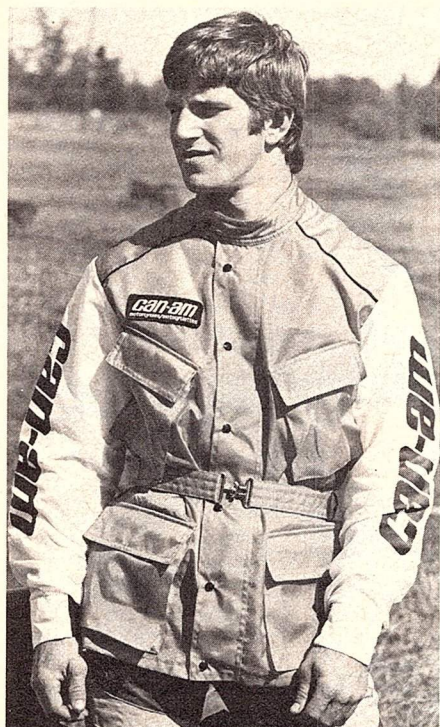
Folding Levers: Dirt riders who never fall, slide out, side-swipe rocks or clout tree stumps need read no further. The rest of you will see the invaluable advantage of these Hi Point spring-loaded, folding levers. Pre-splined shift levers are made for most popular bikes and come with retaining bolt and rubber cover. Add-on brake lever is univer-



sal for all bikes and is of the same design as the shift arm. All models are chromed steel. These levers prevent mishaps from breaking, bending or smashing the arms. Sold by all Hi Point dealers. Information available from Hi Point Accessories, 3709 W. Erie Ave., Lorrain O 44053.

CIRCLE NO. 12 READERS SERVICE PAGE

Can-Am ISDT Jacket: Enduro and Six-Day riders will appreciate the pocket space provided in this jacket. There are four in the front and a big one across the back, all with flaps secured by the magic of Velcro, as are the sleeve cuffs. The only place they missed with the stuff was over the front zipper flap.



The Nylon shell is water-repellant, the elbows are padded, and your deodorant gets help with flow-through vents in the armpits and back pleats. The body is bright orange and the sleeves are white. The jackets come in five sizes from XS to XL, priced at \$45 from Can-Am dealers.

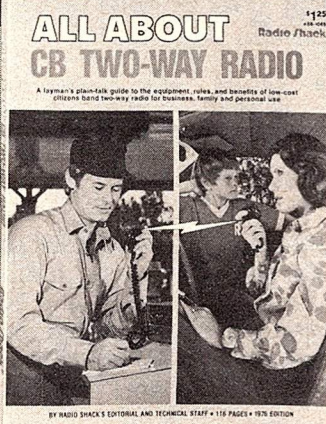
CIRCLE NO. 13 READERS SERVICE PAGE

(Continued on page 85)

MAY 1976

Everything you need to know about CB is in this new book by Radio Shack!

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- Types of radios • Antenna facts
- Methods of installing equipment
- How it works • Distance • Rules
- CB slang • Glossary • More!

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Our just-published 116-page CB pocket-size book is available now at Radio Shack stores at a "give-away" price of just 25¢, prior to its listing in our catalog at \$1.25. If you're into CB 2-way radio or getting in (as who isn't!) you'll want this book to avoid costly errors.

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CIRCLE NO. 42 ON READER SERVICE PAGE.

"I USE GUNK CYCLE PRODUCTS"



"I race dirt bikes and I need performance to win. GUNK CYCLE products give me the winning edge. For all bikers who won't settle for less than the best in cycle products, I recommend GUNK!"

GUNK

GUNK MEANS PERFORMANCE!



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Chicago, Illinois 60638

RADIATOR SPECIALTY CO.
Charlotte, N. C. 28237
Serving East, Southeast and Far West

CIRCLE NO. 44 ON READER SERVICE PAGE.

83

By your second or third bike, it'll start to make sense.

Our T'NT* may not be the first motorcycle you buy. We aren't interested in building a lot of motorcycles. Just a few good ones. So, by the time you get around to us, you'll have ridden enough to know exactly what you want from a bike.

And you'll know that we've built the bike you want. We make T'NT* handle the way you want it to. With long travel Betor front forks. Adjustable S & W rear shocks. A swinging arm that's pivoted on the rear engine mount for precise drive chain action. A steering head that adjusts through 6 degrees of fork angle to tailor your T'NT* to the terrain you ride. And a triangulated, double loop, high tension steel frame that rigidly maintains the suspension geometry that's cranked into it.

We made T'NT* go the way you want it to. With an engine that's probably the finest single cylinder two-stroke in the world. (Who can argue? Our T'NT* is fast enough

to hold stock production world-speed records in every class we build, yet reliable enough to have won five ISDT Golds in the last three years). The T'NT* is available in 125, 175 and 250 cc. versions. All three are serious dirt bikes. That just happens to be fully street legal.

T'NT.* Maybe it won't be the first bike you own. But it'll probably be the first one you keep.

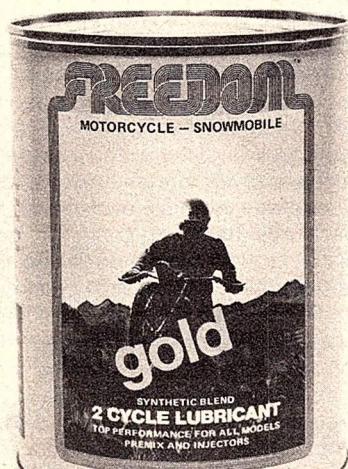


can-am
motorcycles

*TM Bombardier Limited

A division of Bombardier Ltd.,
Valcourt, Quebec, Canada J0E 2L0

Synthetic Two-Stroke Oil: Freedom Industries has introduced a new two-stroke motorcycle engine oil for all models. Their synthetic blend is said to be good for both oil injection street bikes as well as high performance pre-mix engines. While suggested for use with oil injection systems, the pre-mix



gas-to-oil recommended ratio is 36:1, or one 18 ounce can to five gallons of fuel. The manufacturer claims smokeless operation, high film strength for ring and bearing protection and cooler engine temperatures. List price is \$1.95 per can. Information available from Freedom Industries, 13930 Stansbury, Detroit, MI 48227.

CIRCLE NO. 14 READERS SERVICE PAGE

The Afterburner: For the motocrosser who has it all and is looking to out-trick his competitors, Miller Mano has just to solution. Resembling a form of an exhaust appendectomy, the Afterburner is the latest development in motorcycle two-stroke tuning. By eliminating the conventional stinger and



mounting the tail-section off the chamber cone, the snail-type pipe is greatly compacted. The manufacturer claims quieter performance and a broader riding range. Includes a money-back guarantee. Models available for most machines. Information available from Miller Mano, 230-M Crescent Way, Anaheim, CA 92801.

CIRCLE NO. 15 READERS SERVICE PAGE
MAY 1976

PLANNING TO MOVE?

Let us know 8 weeks in advance so that you won't miss a single issue of **CYCLE**.

Attach old label where indicated and print new address in space provided. Also include your mailing label whenever you write concerning your subscription. It helps us serve you promptly.

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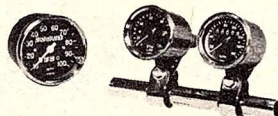
Add'l postage per year: Add \$1 for Canada; \$2 for all other countries outside the U.S.

They Agree on VDO



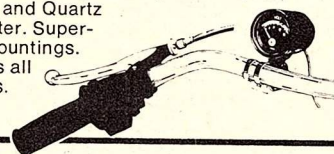
Different strokes. That's what bikes are all about. And why bikers rarely agree. Except on VDO. From cafe racers to cross-country campers, road riders know no one builds better, tougher tachs and speedos than VDO "Bikers". Off-road competitors respect VDO's "Enduro" speedo and Racer as the most rugged and reliable instruments anywhere. Get the details from the new VDO Cycle Catalog. Just 50¢. See why they all agree on VDO.

NEW! Handlebar-Mounted Gauges



Bold, beautiful, lighted for night riding. Biker models have bright chrome cases, Enduro in matte black.

Here are the cycle gauges you've been waiting for. Oil Temperature, Oil Pressure, Voltmeter, and Quartz Chronometer. Super-cushion mountings. Bracket fits all handlebars.



Here's half a buck. Send the works!

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116 Victor, Detroit, MI 48203 • 6109 Lankershim Blvd., N. Hollywood, CA 91606

PRECISION INSTRUMENTATION FROM GERMANY... FOR THE WORLD.

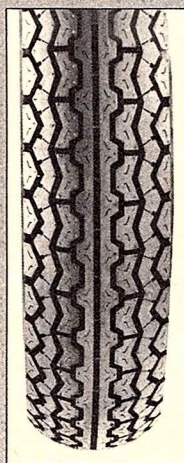
GET IN ON THE TRACTION

With Yokohama's 130-mph Speedline 983 THE NEW YOKOHAMA.

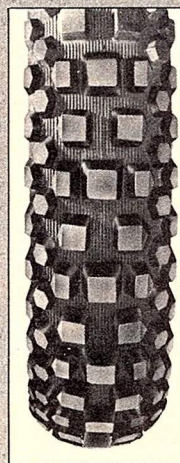
Getting your power to the ground is the problem. Yokohama's Speedline 983 is the answer.

Designed for sustained speeds up to 130 mph, the Speedline has excellent traction and stability. The symmetrical design eliminates high-speed wobble, and over 700 gripping edges work with the tread design and compound to deliver maximum traction, wet or dry.

Add the wide-tread, low-profile look that says as much about performance as the way you ride and you'll see why the Speedline 983 is Yokohama's assurance that you'll get in on the traction.



**SPEEDLINE
983**



**SUPER DIGGER
903**

Two tires designed to give you real traction. Speedline 983 takes to the street at speeds up to 130 mph. Super Digger 903 is our hard-compound dirt tire for harder surfaces, and there's a companion Super Digger 901 for soft surfaces. See them all at your Yokohama dealer.



YOKOHAMA

THE YOKOHAMA RUBBER COMPANY, LTD.

1530 Church Road / Montebello, California 90640 / (213) 723-9691

C-576

DAYTONA Continued from page 33

There was more good news from Hennen—the brakes worked beautifully.

The Hunt TZ-250 had Amal carburetors, but that's the stock carb on all the latest TZ-250s, and the Amals are really more an alternative to, rather than an improvement on, the common Mikuni. Internally, the engine, meticulously assembled by Harry and Roland, his helper, had two interesting aspects. The combustion chambers were re-machined into open, no-squish chambers like the 750 Suzuki racers. Furthermore, the combustion chambers and the piston crowns had a plasma-sprayed zirconium-oxide coating. There was very little evidence of high temperatures (baked-on castor oil) under the piston crowns, even though one set of pistons used in practice showed signs of detonation on their tops. It's possible that the coating resulted in more power, since two-strokes are quite sensitive to crank-case heating, which expands the charge and reduces the amount trapped in the cylinders. The coating may reduce the heat coming down from the piston crowns—both from radiation and direct contact with the turbulent charge. Of course the Hunt bike benefited from more than a couple internal tricks; its speed also came from sharp jetting, precise ignition timing and very careful gearing.

Again in 1976, no one disputed that Doug Teague's self-tuned TZ-250 was absolutely the fastest Yamaha twin at Daytona. The bike, respected and feared for its speed last year when the Chrysler engineer finished fourth, returned to Daytona with more power and a new home-designed fairing. Teague thought his Yamaha was no faster than before, but it probably accelerated a bit harder pulling the same gear as last year. The Daytona test-results of his fairing proved inconclusive, though it certainly offered the rider more protection while presenting a blunter but more enclosed engine compartment than the standard TZ-250.

Attempts at better streamlining suggest that 250 Yamaha riders are looking beyond the engine for incremental improvements in performance. Although there may not be any drastic increases in power from the TZ-250, be assured that Teague, and others like him, can still coax more power out of the watercooled twin.

Those connected with the factory Harley-Davidson RR-250s could only wish for Teague-like power. A long series of interconnected problems began with carburetion, and extended to transfer timing, exhaust timing and expansion-chamber configuration. Jay Springsteen's bike qualified for a second-row start in the 100-miler, but Greg Sassaman found himself buried in a fifth-row starting berth.

Inside the first five miles of the Lightweight International, the race pattern formed: a three-cornered affair between Hennen on the Hunt Yamaha, Roberts (Continued on page 90)



Hopefully, your motorcycle isn't as out-of-date as the wheels it came with.

They're perfectly OK, you say... those wire spoke wheels with tube-type tires. Nothing wrong with them.

True, But...

Have you ever stopped to think about what's not *right* with them—or never *will* be?... That wheels basically haven't changed in over seven decades, while innumerable advances have been made on motorcycles?

...And that by now, *someone* should have perfected a practical wheel system that's dramatically, demonstrably better?

Well, someone has.

A motorcycle enthusiast with a worldwide reputation for precision alloy casting and engineering innovations. Tom Lester.

The Lester Wheel System.

The Lester Wheel System offers tomorrow's advantages today.

In a few years, all motorcycles will have cast wheels and tubeless tires as original factory equipment.

Why? Because only a cast wheel can accept a tubeless tire. And a tubeless tire tracks truer than a tube-type. Provides less unsprung weight. Improves handling. Runs cooler. Balances better.

Tubeless tires are still a short time off. But you can enjoy all the performance benefits of cast wheels now. And the Lester Wheel System lets you put on tube-type tires for a better ride today.

Then, when tubeless tires become generally available, you'll be ready for them!

The Lester Wheel.

Quite simply, it's the strongest there is, surviving torture tests that destroy any other wheel, cast or spoke.

An incredible amount of engineering ingenuity and research has gone into it right from the start.

The metal is a very lightweight and heat-treated-for-strength aluminum alloy, A356-T6.

The I-beam cross-section configuration of the seven spokes provides the most strength for the least weight, too.

Lester casts its wheel in two parts. The hub. And the wheel itself. Why? Because there is no one-piece casting technique for wheels that isn't a compromise with quality—and Lester standards have no room for compromise.

The two parts are then electronically argon-welded together to form a single integrated unit.

A word about quality control.

As the Lester wheel was being developed, every design and performance detail was checked and double-checked in demanding tests; tests for static leakage, deformation, radial load, burst, impact resistance and roll integrity.

Needless to say, there were road tests, too—because things happen differently outside a laboratory.

But all this was just a prelude. Every Lester wheel has to pass stringent Zyglo® tests. Any one that doesn't pass is scrapped—then and there!

Quick and simple installation.

You can have Lester wheels on your bike in just a couple of hours.

Have your dealer do it or do it yourself. All you need are the tools that came with your motorcycle.

You don't have to buy adapters, special fittings, sprockets or brake conversion kits. There are no complex, tedious procedures to follow.

The front wheel comes with original-type bearings and spacers, factory installed.

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Maybe what inspired him was our new Kawasaki dirt bikes. Mine's the KD-125. He got the KD175. They're strictly off-road, hard-core play bikes for dirt freaks like us. Mine has a 6-speed trans, his has a 5. They have a rotary valve engine, self-cleaning alloy rims, full knobbies, plastic fenders, a washable air cleaner element, cleated footpegs—the works. And they're dynamite. No lie.

Anyway, Saturday we were ridin' our tails off in this incredible woodsy place we never had been to before. And we just plain wore ourselves out. So we bagged it for an hour. At least I did. And all of a sudden Larry shakes me awake and does his number about what he just "saw." He even acted furious as hell when I told him to quit smokin' the ferns and go back to sleep. "I'm tellin' the truth!" he yelled. "Okay," I said, "but you forgot Goldilocks and the three bears. Where were they?" That really made him mad. Probably because he didn't think of it himself. The only thing I never figured out is where the yellow paint came from.

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DAYTONA Continued from page 86

aboard Yamaha International's 250, and Baker with his bike from Yamaha Motor Canada. In the trio, Hennen had a slight advantage in top speed; Baker's bike had a clear edge over Hennen in acceleration; and Roberts appeared only to have one particular advantage—being Roberts.

It was competitive enough for the first-place chargers; the lead swapped hands at least 18 times in the first 50 miles. Roberts, temporarily in the lead, waved at Hennen, urging him forward. "I'm trying, I'm trying," Hennen thought as he closed on Roberts, re-gained the lead, and staved off Baker.

Meanwhile Ron Pierce's Kawasaki circulated in a distant fourth place. The KR-250 just didn't have its earlier speed, and Pierce opined later that mis-gearing might have been at the root of his predicament. His KR-250 had been geared perfectly for the heat race in which some Yamahas may have been slightly over-geared. Before the 100-miler, most Yamaha riders dropped their gearing, responding to rising wind conditions at the Speedway. (Yes, 250s are that sensitive.) Pierce, reluctant to jeopardize his top speed advantage, gambled that the KR-250 would pull the same gear as before. It just didn't.

Even so, the gearing wasn't all the Kawasaki's problems. Pierce still had poor brakes despite the wrenching and changing. There were other Kawa-woes. Gary Nixon soon retired, a victim of brake problems, while Hansford lost a connecting rod big-end in his KR-250. That left Pierce trucking along, the only Kawasaki in near-contention.

Pierce had one final problem—water. Running down the front straight, Pierce noticed that his water temperature gauge had failed; at the same time his right foot was getting very wet. Closing on the first turn at 140 mph, Pierce had to decide how serious the problem was, and what to do about it. He thought the water-gauge connection had broken at the engine; since only his right foot was wet, there was a good chance the coolant was leaking on the right side only. Consequently Pierce decided to plunge into corner one (a left-hander) at a cautious speed. No sooner had he clicked into the first corner than the rear tire broke traction, and Pierce's ride ended in a green-and-white tumble.

Scuffed up but uninjured, Pierce later discovered the water-gauge unit had not fractured; the coolant apparently leaked past the radiator cap, blew back and eventually covered the rear tire. Pierce's instant analysis had been a good guess. At most he had three seconds to recognize the problem, assess the situation, and devise a plan. But racing is a hard taskmaster. Good guesses usually have no reward; only the right ones count.

The winner of the 100-miler was any-

(Continued on page 96)



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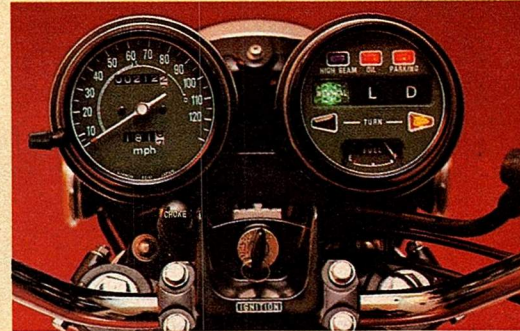
The Honda CB-750A is more than just a new touring bike. It's a whole new concept in the sport, bringing unprecedented ease and control to the world of motorcycling because it takes the work out of stop-and-go riding. It simply shifts for itself.

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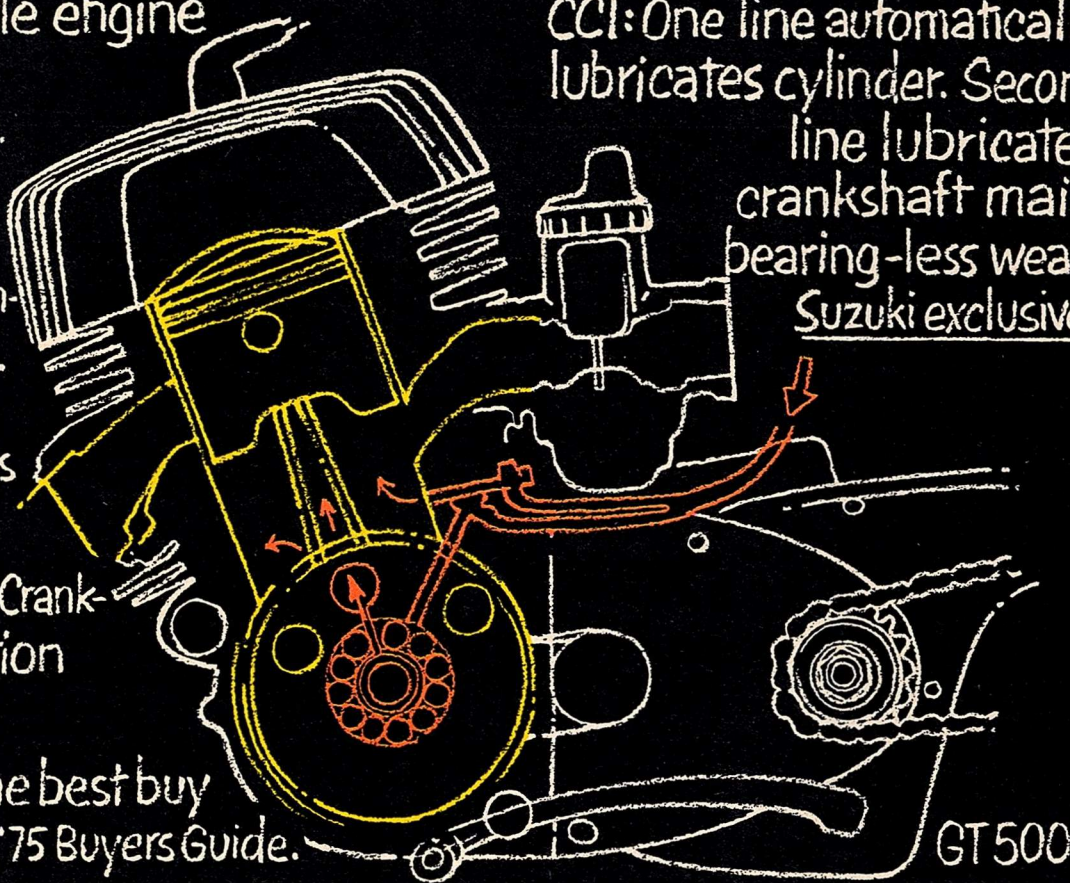


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GT 250: Primary kick, 28mm carb, front disc brake, 6 speeds.



GT 500: PEI, front disc brake, 4.5 gal. gas tank, 5 speeds.

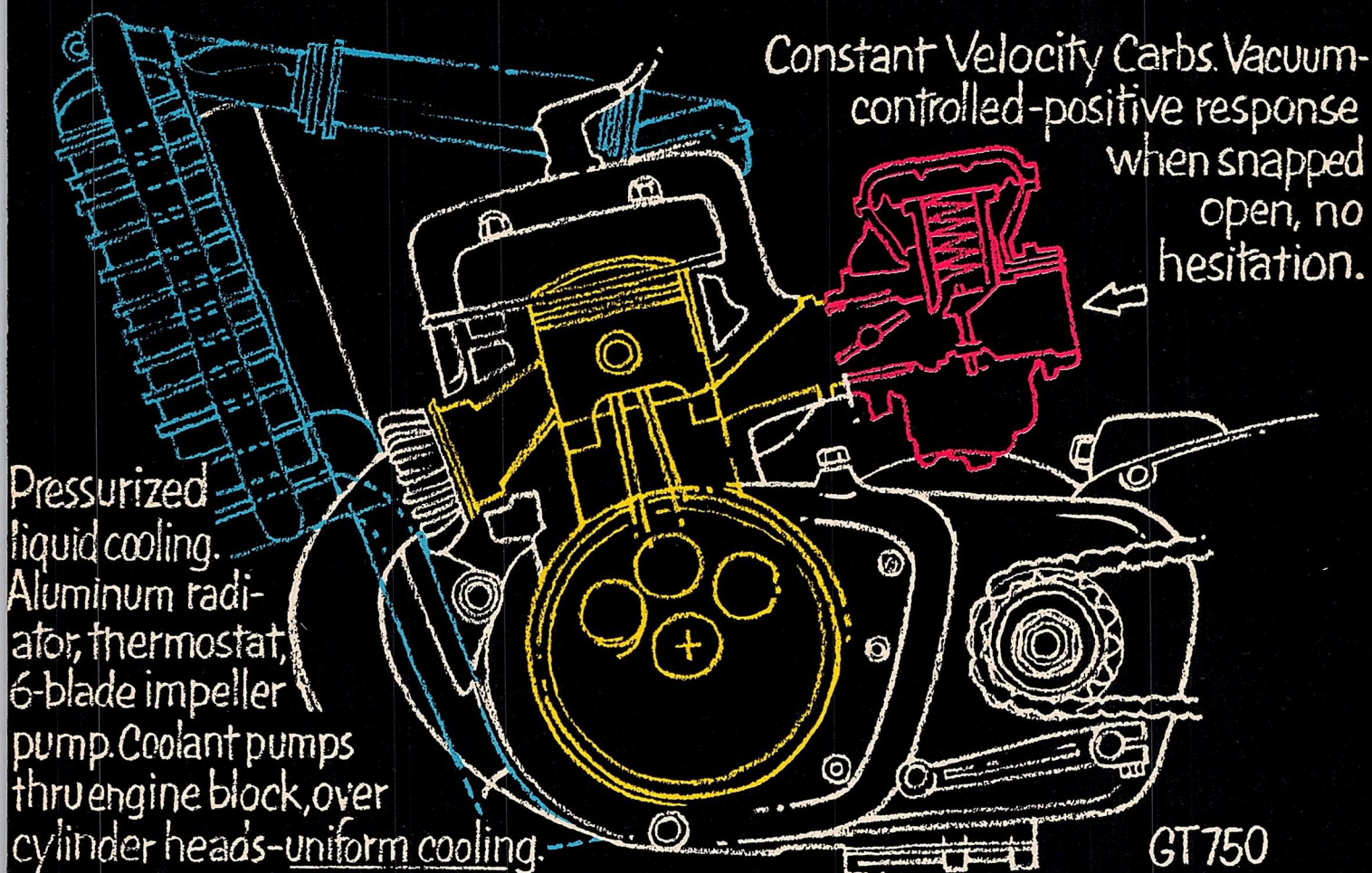
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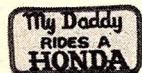
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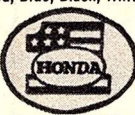
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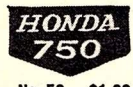


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DAYTONA Continued from page 90

one's guess until Hennen, Baker and Roberts started breaking through heavy infield traffic. Back-markers got passed with great authority and precious little margin. Downfield-runners created corners within corners by setting up mobile chicanes for Roberts, Hennen and Baker. On the infield horseshoe, a slower rider arrived at the apex, or what he thought was the apex: imagine his surprise at seeing Steve Baker's front wheel on his right, and then having an entire motorcycle instantly materialize on the absolute edge of the pavement. Baker jetted past before anyone could hold his breath. Roberts had no time to hang about either. Baker pitched his bike into the one-eighty, gassed it hard, and then saw Roberts sweeping past on the outside.

To say that Roberts, Hennen and Baker threaded or cut or sliced their way through traffic misrepresents the situation. They simply exploded through jams. The sheer force was incredible. It was like three guys with nine-pound hammers knocking the caps off a roomful of coke bottles without cracking a glass.

Roberts prevailed. Hennen, poised and smooth on his first Daytona 250cc ride, observed: "You look at Kenny's lines, and you see what you're supposed to do, but doing it yourself every time is another thing. His riding is really disciplined, and he knows every inch of Daytona." Baker agreed: "Roberts rides with complete decisiveness in traffic. I may think twice before doing something, and that's the difference. He doesn't hesitate. Kenny is very fast in the infield sweeper; I nick it back a little but I think he runs it flat out. I can get into the chicane just as hard as Roberts, but he gets out harder."

Roberts drew away, leaving Hennen and Baker to dispute second. Hennen saw Roberts stack up inches here and feet there: "I fell back about midway in traffic; only then did I feel a little desperate trying to pick up." Hennen, cool and smart and fast, lost neither his composure nor second place.

Meanwhile, Doug Teague and his super-fast Yamaha inherited fourth when Pierce crashed, but Teague was far adrift of the leaders. In the closing laps, however, the Detroit rider got overseas company—Hideo Kanaya on a works Yamaha. Speedwise, Teague had Kanaya covered, so Doug wasn't especially worried that the Japanese rider was getting into turn one harder than Teague ever cared to try. On the bowl, Teague only had to be close, and his motor would gobble up Kanaya's bike like an afternoon snack. But last lap traffic bogged Teague in the horseshoe, and Kanaya quickly spread the distance. Teague came up short, and Kanaya turned up with fourth.

So intense were front-line battles that the second five finishers took the checkered flag in near obscurity: Phil McDonald

(Continued on page 98)

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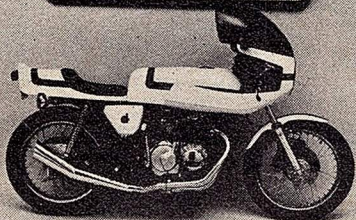
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DAYTONA Continued from page 96

led the second quintet, followed by Kevin Stafford, Tom Byars, Mike Devlin and West German Harald Merkl.

Roberts, Hennen and Baker put on a show that few will soon forget. But it was a race, not some carefully staged production. The sweat was real. Privateers were not overwhelmed by junior-sized OW-31s. Hennen's bike with standard suspension, thanks to its first-rate preparation, was fully competitive. Pat finished second, sandwiched by two works bikes, because he was the best privateer on the race track. And no one got knocked out of the race by circumstances completely beyond the control of the rider or tuner. Pat Hennen spoke for all the front-runners, when he bubbled afterwards: "Boy, we really had fun out there." And so did everyone who watched.

This year's 200 was a lot of things, but fun wasn't one of them; nor was it a race in the truest sense. The suspicion, since the advent of the TZ-750 Yamahas, has generally been that the bikes are more missiles than motorcycles, that they are aimed and ignited, not ridden, and that riding one is a job of work not one corner or particle of which lapses into an activity remotely resembling fun. The OW-31 Yamahas were serious, quick, seething with potency; they were to conventional TZ-750s as Muhammad Ali is to the Lion of Flanders. This became clear after qualifying Thursday afternoon: OW-31s occupied grid positions 1 (Roberts: 2:05:02), 2 (Steve Baker: 2:06:30), 3 (Hideo Kanaya: 2:07:54) and 4 (Johnny Cecotto: 2:07:67). Rookie expert and Roberts protégé Skip Aksland nailed down the outside of the first row with a 2:09:48. Behind them were Pat Hennen, Pat Evans, Pat Pons, Gene Romero and Gary Nixon, and in the third row sat Gregg Hansford, Steve McLaughlin, Mike Clarke, Tommy Byars and Warren Willing.

The green flag flew and the dance began with Pat Evans, taking desperate chances on cold tires, leading into and out of the infield. He had been passed by all four OW-31s by the start-finish line; on the brakes too late to negotiate ultra-fast turn one, Evans and his Yam came to rest in the middle of a thunderous dust and sod explosion 100 yards off the track. By lap six Cecotto, Roberts and Baker had hooked up tight; Kanaya had fallen slightly off the pace; Gregg Hansford was being stalked by Gary Nixon; Sheene, McLaughlin, Romero, Aksland and Hennen began to knit themselves into the most exciting duel of the afternoon; and Ron Pierce was waiting for shifter problems that would surface shortly.

And the wheel of chance bumped: Baker was out, lap 11, with ignition problems; Aksland went down in the hairpin when his front wheel was whisked out from under him by a slower rider, being lapped; Hansford's chain came adrift on lap 20, bringing Nixon into fourth, just

ahead of Barry Sheene's Suzuki, McLaughlin's private Yam, Romero's Vesco Yam and Pat Hennen's Coleman-sponsored, privately-tuned and Suzuki-GB-assisted 155-mph water-buffalo.

Roberts held Cecotto nicely through 17 laps, at which point both came in for gas, Cecotto benefiting from the quicker tank-up. But Ken got him back on lap 21. With slower traffic thinning out Roberts dialed his speed up to "unbearable," and Cecotto, now encumbered with an expansion chamber with a big hole worn in its bottom, began giving ground.

That laser-bright burst of speed is probably what did in Roberts' rear tire. "There was still a lot of traffic on the track, and my bike was starting to skid across the start-finish line," Ken explained later that evening. "Boy, you have to have your sensors out all the time. The bike and the traffic were so difficult that I couldn't even read Kel's pit signals. If I'd known that I was running 2:03s, I would have slowed down." But he couldn't, and he didn't—and by the 33rd lap Roberts' Goodyear gumball became a time bomb, ticking.

The designation on the late-model Goodies is 1381-A. They're .2-inch taller than last season's 1381s, internal design is slightly different and the compound is the same. The tires do not like to slide. When they're sliding the surface overheats and rubber is grated off at a rapid rate. The less rubber there is, the more they slide—which results in even less rubber, and even more sliding, until the vicious circle is completed by the appearance of tire cord and shortly thereafter, a flat.

Kanaya, running behind Cecotto and Roberts, got into tire trouble first. Hideo is a charger; Hideo likes to keep up, despite the fact that he has not quite the ability of a Roberts or a Cecotto. So Kanaya was accelerating out of the last infield corner with greater enthusiasm than the riders he was trying to catch, and skidding around more earlier in the race. The last corner is a dangerous place to be hard on the gas, because it is a new corner, paved with fresh asphalt that wasn't there when Goodyear was running its tire tests last winter. New pavement wears out tires faster than old pavement; as a consequence Hideo found himself called into the pits for a fresh rear tire on the 42nd lap, dropping him into 7th position, where he stayed for the rest of the race.

Even so, Hideo stayed out there four laps longer than he should have. When Goodyear technicians saw the tattered condition of his 1381-A, word was rushed across the infield: *get Roberts in.*

Roberts, meanwhile, didn't need a pit signal to tell him he was in the gravest danger. "Halfway through the race the bike was doin' these big dirt-track numbers up alongside the concrete retaining walls in the high banks, and sliding across the start-finish line. The back tire didn't even feel like it was on the ground at all, and half-way through the race I couldn't

(Continued on page 101)


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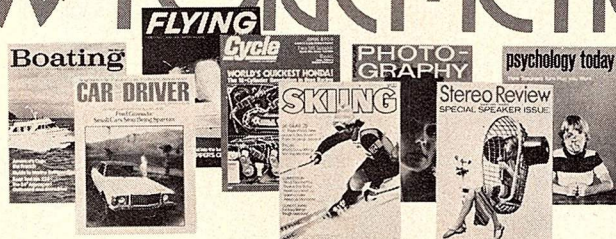
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even hold it wide open around the banks in fifth. Hey, that ain't really racing at all. What? You run wide open for five laps or so and then see who can baby his bike all the way to the finish line? Besides, the speeds are so high now that there flat isn't any room for mistakes. You can't draft with these bikes, and there's only about 20 guys in the world who know how to ride 'em safe. Everybody was slidin' around—even Cecotto. I'm not interested in continuing on racing like that."

Roberts' racing career damn near ended permanently on the 45th lap. "I'd already decided to pull 'er in at the end of that lap," Ken said. "But I almost didn't make it. When the tire went flat I saw the hay bales on the outside of the turn, and figured I'd better miss 'em. So I aimed 'er for the bank, and there were a lot of photographers and stuff sittin' up there, and I had my mind made up that I'd let go of the bike and jump the bank. Instead I hit it like it was a big berm or something, and there were photographers and cameras and everything in the air, and then I rode 'er back to the pits. Then I screamed at everybody and it was all over."

Four or five minutes later Roberts was back on the track, going quickly with a new rear tire. But there was no way he was going to catch Cecotto, who knew that he too had a problem, but was going to try to

nurse it to the end of the race. Which he did, a lap ahead of Nixon, Hennen, Romero and Pons, and at least two laps ahead of everyone else.

Why Cecotto and not Roberts? Several possibilities. First, Cecotto's people had suspected that the hard-running Yams might have a tire problem; Roberts' people did not. Second, Roberts unleashed a string of 2:03 laps; Cecotto's fastest was a 2:04.6, on lap 9. Third, Cecotto's rear suspension was adjusted where it handled the best; Roberts' and Baker's were adjusted so that the center expansion chamber wouldn't drag on the ground, which were settings that didn't necessarily give the best handling and as a result may have caused excessive tire wear rates. Cecotto's people knew that the pipe would eventually develop a hole, and compensated the bike's jetting so that it would run safe and sassy even with the damaged chamber.

The issue between Cecotto and Roberts was far from settled at Daytona. Roberts cut faster laps; Cecotto made it to the end of the race. The Roberts crew and the Cecotto crew have stood eyeball-to-eyeball at least three times now, and each time the Roberts crew has blinked first.

But while that issue continues to be a source for debate, there can be none about Nixon, Hennen or Romero, who finished second, third and fourth. Nixon

(Continued on page 102)

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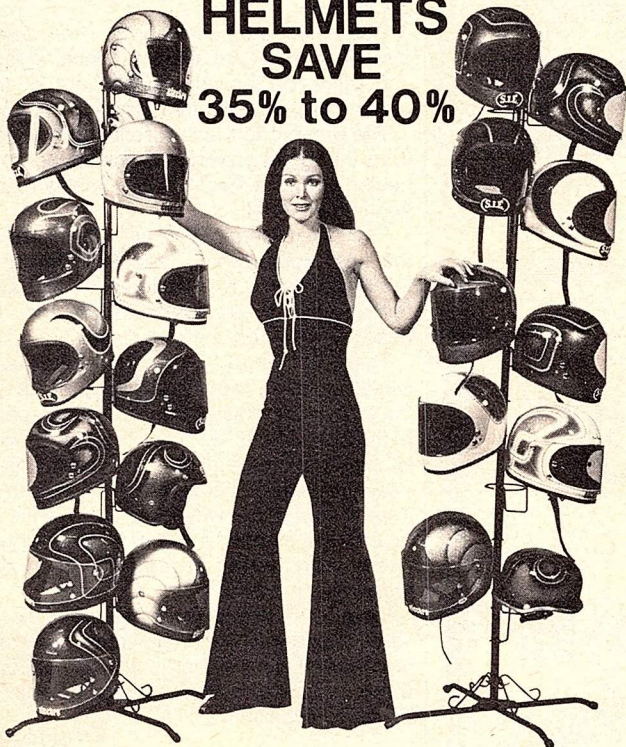
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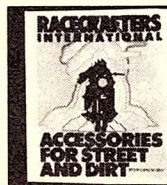
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DAYTONA Continued from page 101

knew what he had, and what to do with it. "We were goin' for fifth," Nixon said. "We lucked out." It's about time. Pat Hennen, with assistance from Suzuki GB and from his San Mateo friend Kerry Kiel, likewise knew what he had—a bike that was 25 mph slower than the OW-31s. His plan was to be smooth, stay out of trouble and sustain a pace that he figured would pay off after 200 hot, scary miles. Tiger Gene Romero had more trouble than Pat, and dealt with it in the manner of the true professional—which he most constim-mately is—by increasing his concentration in direct proportion to the problems he was suffering, primarily vision. Tiger Gene with sheets of gasoline staining both sides of his face shield, simply could not see where he was going. Behind Romero came a pair of Frenchmen, Patrick Pons and Michele Rougerie, demonstrating that European go-fasters are fast, period.

Ultimately Daytona '76 must be viewed as a mixed success at best. Johnny Cecotto's people knew more and suspected more than Kenny's people, and what they suspected turned out to be right. The race dodged perfectly horrible danger lap after lap and was decided not by who could go the hardest for the longest but by who could keep from going the hardest for the longest. That, according to Ken Roberts, is not racing. And who should know better?

TIPS Continued from page 18

goes for less than \$3.00. Here's how the job is done:

Disconnect the flasher plug. Then, using a small screw driver, press the locking tabs and push the individual wires out of the plastic plug. These wires are color coded.

The green and black wire is the hot lead from the ignition switch. It should be connected to the flasher's "X" terminal, and the connection taped.

The green and yellow wire leads off to the turn signal switch, and from there to the signal lights. It goes to the signal system's load, and is connected to the "L" (load) terminal on the turn flasher unit.

There is a third wire, coded black and white, going to the small pilot light up on the instrument cluster. This one is attached to the flasher's "P" terminal. The fourth wire is brown, and it's just a ground, which isn't needed when you use an automotive flasher. Tape it out of the way. You won't have to tape the other leads if you can find the right three-prong flasher receptacle at an automotive supply store.

When the work is done and your signal lights are signalling once again, you can pry open the old flasher, marvel at its complexity and save it as a classic example of Teutonic overkill.

Alvin Peirson
Marlton, New Jersey

Z-1 CARB SYNC

To synchronize the carburetors on my Kawasaki Z-1 I made up my own gauge set at
(Continued on page 104)

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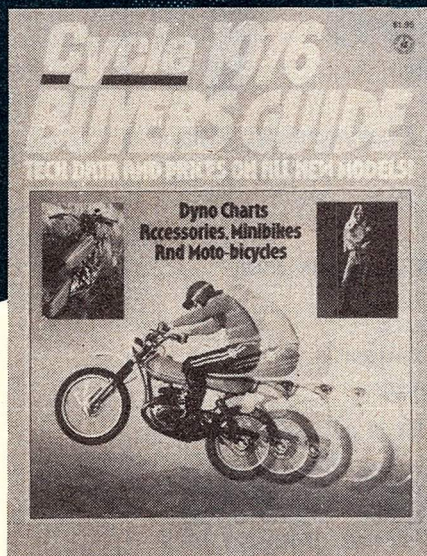
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TIPS Continued from page 102
considerable savings. The materials needed are:

One vacuum gauge (I used a Craftsman that cost \$12.00 but a less expensive one will do); one four-way valve of the type used in aquariums to supply four air lines from one pump; 12 feet of 3/16" ID vacuum tubing.

The valve body should be sealed because manufacturers aren't too fussy about air leaks, but for accuracy it must be done. The manifold is brass, so I soldered all the joints, but you could also use epoxy.

Connect the gauge to the common fitting on the manifold with the tubing, and use about three feet of tubing for each valve-to-cylinder connection. For neatness, I mounted the whole thing in the styrofoam box the gauge came in. Total cost was under \$20.00 (less than half of any four-gauge set), and using one gauge, instead of four, eliminates any discrepancies you might get between gauges.

The operation of this set-up is quite simple: with the vacuum tubing connected to the manifold fittings on the engine. Just open one valve at a time to read the vacuum on the respective cylinder. Open the valve only far enough to get a reading, otherwise the gauge will fluctuate so rapidly it won't be readable. Then just follow the factory procedure to do the job.

Daniel Crovo

Revere, Massachusetts

DIMMED BULBS

As I have a habit of riding at night, I was

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interested in some form of driving light to supplement the none-too-ample headlight on my T500 Suzuki. I found a small driving light in a J.C. Whitney Automotive Catalog of all places. The unit has a small, unobtrusive size (2½ in. diameter) and an easy-mount bracket that is a snap to mount anywhere.

They have a very small current drain: my electrical system handles two of them easily. And talk about bright! One flash of them will have oncoming cars dimming their lights a quarter mile away. They are undoubtedly the best safety feature I've found yet, and at a paltry five bucks apiece, a bargain to boot. I would recommend them to anyone, even car drivers.

J. R. Lord
Topeka, Kansas

WELL, WHY NOT?

One hard-won riding tip: a hazard as severe as potholes, oil slicks and sand traps is a change in life style. You may not see it coming: suddenly you're on a different shift, had a family fight, threatened a competitor and cut your intake to peanut butter. When you're under stress and less responsive a bike, especially a big one, gives a feeling of power—too much and you have an instant custom modification on your machine if not your bod. Techniques for coping range from plain determination to sophisticated nutrition and yoga. One book, appropriately called *Shifting Gears*, observes that "being centered is like riding a bike."

To me there are two pavements and two balances: one physical, the other composed of life patterns and responses. Mastering the unseen may be half of riding technique.

Allan Slaughter
San Francisco, California

TUBE TIPS

I found one quick way of replacing valve stems back in their holes without special tools. I used to stick my fingers in the tire and try to direct and push the stem through the stem hole. I found that if a screwdriver (of small size) is stuck through the rim in the opposite direction and into the stem, that it's an easy matter to direct the stem through the hole. You direct the stem with the screwdriver and push with a finger. If done right, the rim tape won't get pinched in between the stem and hole.

Second, to those people who use any other method of repairing a flat than hot patches, you're wasting precious time. A cold patch kit is great for emergencies, but that's it. They don't stretch with the tube or do they take stress as well as a hot patch.

Finally, except in emergencies, never use that liquid seal which is squirted into the tube. It eats your tube out, and the next time you get a flat that won't seal, it's new tube time. When you put a hot or cold patch over a tube filled with this sealer, it falls off. This gook gets under the patch and loosens the bond with the tube.

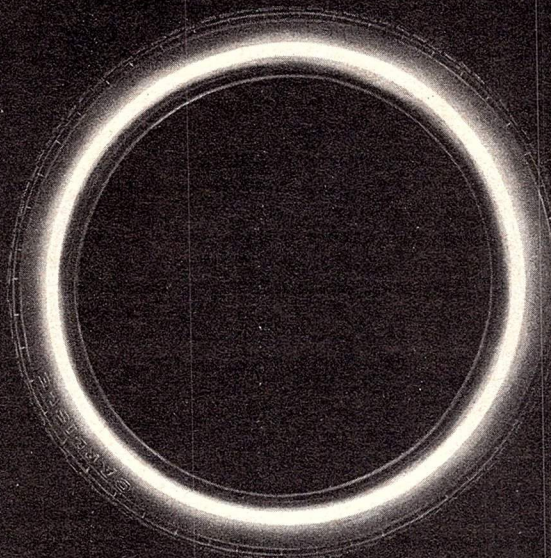
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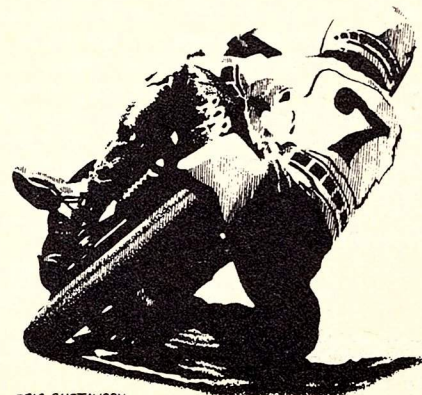
PORTING Continued from page 36

the piston crown drops below the lower edge of the exhaust port when it's at the bottom of the stroke you shouldn't assume you've found a sloppy mismatch needing correction. It may be that the exhaust port floor has been purposely left high to match the position of the piston skirt's lower edge at top center, and lowering the port floor would have the crankcase breathing from the intake and exhaust when the piston reaches the top of its stroke.

A particularly depressing (and conclusive) mistake you can make is to over-widen a two-stroke's intake or exhaust ports. If you over-do things on the intake side, and make the port so wide that it overlaps the piston's transfer cutaways—which are the high, rectangular arches below the wrist-pin—the piston skirt won't close the port and the engine won't run. It rarely is possible to widen an exhaust port enough to create an entry into the crankcase without first cutting into the flanking transfer ports, but widening here can still cause problems. A two-stroke's piston rings bulge out into the ports passing over them, and bulge farther in a widened port. Racing two-strokes have exhaust port widths up to 70-percent of bore diameter, and that works only because the port windows' elliptical shapes help ease the rings back in their grooves without snagging. Don't widen exhaust ports without rounding the windows. And don't raise the top edges of intake ports so far that the pinned ends of the rings can spring out into the port window opening.

The worst mistake you can make with a four-stroke engine's ports is to over-enlarge them, and that also speaks well for hand files: the work is such slow going that you won't be tempted to go too far. The best thing you can do for most engine's ports is to look for casting flaws, and to clean up the areas in which it is clear that the port contours owe more to manufacturing convenience than to any considerations of gas flow. We found that just this much was worth 1¼-bhp in a 250cc Yamaha DT-1 engine.

And the best thing that can be done for your reshaped files is to stop scuffing aluminum at frequent intervals and scrub the metal particles out of their teeth. Let the teeth get really clogged, and they're almost impossible to clean. You can get all the files you need, including three or four rifflers, for about \$20; take care of them and they'll last long enough to do so many ports you'll begin to know where the horsepower is hidden. ©



ERIC GUSTAVSON

heres well to leather pants. The Rokon's air intake is located high, under the saddle base. The air filter is too large (in diameter) and will need replacement for ease of maintenance. The Preston Petty fenders and tail light are enduro standard. The steel headlamp should be siliconed and taped to assure that it stays intact. The VDO speedometer, route chart holder and magnified watch mount are standard enduro items that come with the RT II. The rubber shock-insulated mounting plates for the instruments are cleverly thought out.

The Sun alloy rims mount Carlisle knobies. We didn't like the imprecise, slipping feel of the Carlises, but they won't need replacement until the Rokon is raced. No bead locks are included with the RT II—standard ISDT set-up to facilitate those fabled four-minute tire changes. Enduro riders will need rim locks to run low air pressures. Engine and exhaust noise control is an abomination. Piston slap, engine ringing and expansion chamber banging will cost a Six Day contestant points in a special-test sound section unless modified.

The open torque converter is shielded from damage only; it is not and cannot be sealed. The heat it develops requires abundant venting. This is the Rokon's most serious failing—the drive will slip when it gets wet. A splash of water or brief in-and-out dunking won't phase it much. But when submerged its total loss of drive efficiency can stop a rider in mid-stream. Experienced Rokon competitors can circumvent the problem by bombing river crossings and using stronger drive clutches, but the neophyte will have to learn the hard way.

Our test RT II Rokon came with a standard 3300 rpm torque converter. It doesn't hook up until the engine is revved up to 3300 revs, which brings the RT II close to its peak power output. We had an extremely difficult time adjusting to the big delay between engine idle and hook up with the 3300 unit—especially in slow rock sections. We exchanged it for a 3000 rpm assembly (same as the RT I) and found it far better for picking through tight sections. Most enduro riders will do better with the 3000 unit when starting out on the Rokon. After they become more accomplished, they might desire the standard 3300 converter.

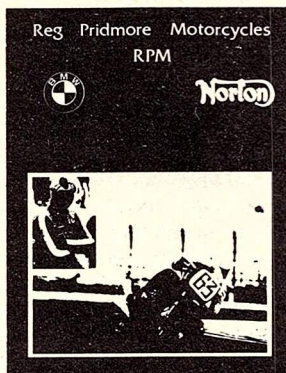
We spent more time adjusting to the Rokon than any other enduro bike we've ridden—including the ferocious Penton 400. Riders with minimal dirt riding experience might adapt much sooner, particularly if they're young, but ancient dyed-in-the-wool gearjammers might never tune in to the Automatic's plentiful peculiarities. Too, the Rokon has shortcomings with its standard suspension, slippery-when-wet primary drive, engine/exhaust noise and sullen acceleration from a stop.

But the rider who bought one will remember why every time he passes other enduro riders who are sunk axle-deep in sand, trying to find neutral at a check, waiting for a clutch to cool or just plain waiting for help because of a wasted gearbox. If you don't own a Rokon Automatic, don't laugh at a rider who does.

MAY 1976

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YAMAHA 500..... Continued from page 57

torque (17.06 lbs./ft.) than the Yamaha (22.49 lbs./ft.) at 2500 rpm. The XT500 also makes five more bhp than the XL350.

Available torque at low engine speeds is the dirt rider's most attractive ally. If an engine can deliver useable torque over a broad range of engine speeds, most difficult trails, hills and sand washes can be traversed with minimal rider concentration and effort. This is what the Yamaha thumper does best. As long as there is traction available, the Yamaha will find little difficulty in scaling steep uphill or sand washes—which push two-strokes close to piston failure.

Though geared quite high for trail use, the XT500 is able to cover most off-road trails with remarkable ease. Acceleration and deceleration occur smoothly and predictably in compliance to throttle position. The engine doesn't rush or surge up to its maximum power range; it climbs smoothly and evenly as the tachometer needle rolls around. Gear shifting is used more to set the speed at which you wish to ride than to accelerate.

Whenever the throttle is closed the engine reacts with a strong decelerating force. By comparison, a two-stroke feels as if it is free-wheeling when its throttle is rolled off. In the lower three gears, decelerating power is great enough to force the rider forward off the seat onto the gas tank. Additional slowing force can be generated by pulling in the compression release lever, which acts much like a two-stroke de-compressor.

Yamaha makes no pretensions about the XT500's abilities as a full-fledged enduro or cross-country competition bike. The concession that Yamaha made with its four-stroke single bike was no-sting engine performance as compared with a two-stroke of equal displacement. But the XT's muted acceleration is a blessing to dirt riders unwilling to accept the drawbacks of the two-stroke's unpleasant racket, thirst for fuel, spark plug consumption and exhaust mess.

The advance that Yamaha has made in updating the thumper engine surpasses the XT's suspension. The fork is equipped with springs that are too soft when new, and they settle one to two inches within the first 100 miles. The stanchion tubes are not especially strong and permit front wheel deflection under stress. Amplifying the soggy fork problem is excessively stiff rear suspension. The Kayaba gas/oil dampers have a definite mechanical, hydraulic or pneumatic restriction which severely limits their response to sharp, quick bumps. In slow, rolling terrain the dampers and springs move adequately. On rough, choppy roads or trails the rear suspension is unyielding and punishing. Other than its mismatched suspension, the XT500 is exceptionally comfortable as a trail bike. The saddle is long and deep; passenger pegs can be installed allowing two-up trail riding without strain or complaint from the engine. The pegs, levers and controls are all comfortably and logically positioned.

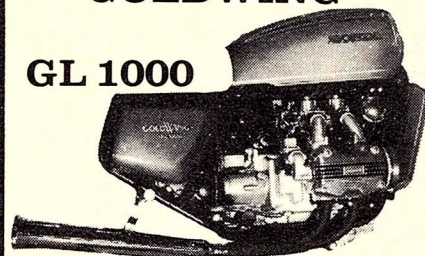
Off-road handling is stable at slow, moderate speeds on smooth or slow-rolling terrain. In soft sections the steering becomes vague, and the poor suspension match makes high-

(Continued on page 112)

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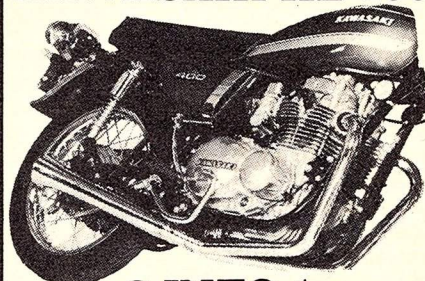
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CYCLE

How to make the world's most popular fairing uniquely your own.

In earlier features, I covered the purposes of a fairing and differences between types... and many things that distinctly separate the Windjammer from look-alikes.

To begin with, I build only one basic fairing—the best. Other manufacturers may offer several models from a stripped down version up to a "deluxe" version. The Windjammer III starts as the best and goes on from there with a list of options that is unmatched in the business.

First, the standard features. We give you more than anyone else.

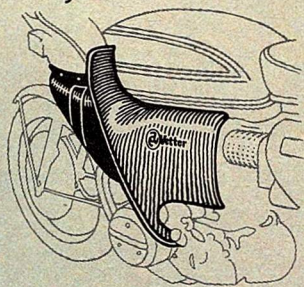
Beginning with the Windjammer III itself—now available in striking silver, as well as black or white.

Standard equipment includes a 7-inch 50/40 watt sealed beam headlamp. Side reflectors. Clear Plexiglas® windshield. All hardware and wiring.

There is absolutely nothing extra to buy.

And the built-in storage compartments carry as much as many saddlebags.

Options: Exclusive Windjammers lowers.



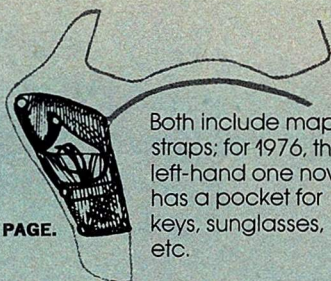
Remember I stated that the purposes of a fairing are rider comfort and weather protection?

A Windjammer III, equipped with lowers, gives you as much as you can get on a motorcycle.

And lowers can be retro-fitted to the Windjammer II.

More options.

Tonneau covers provide snap-down protection for storage.



Both include map straps; for 1976, the left-hand one now has a pocket for keys, sunglasses, etc.

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Color Stripping.

For 1976, we now offer six styles of stripping for the fairing itself, and for the Windjammer lowers.

Four are reflective Scotchlite® colors that increase nighttime safety. Plus, stripping in traditional BMW double-stripe form, and a special nonreflective red stripping for Honda GL-1000 and 750's.

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In my next ad, I'll be discussing even more options and features that many of you have asked for.



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Third in a series* by Craig Vetter



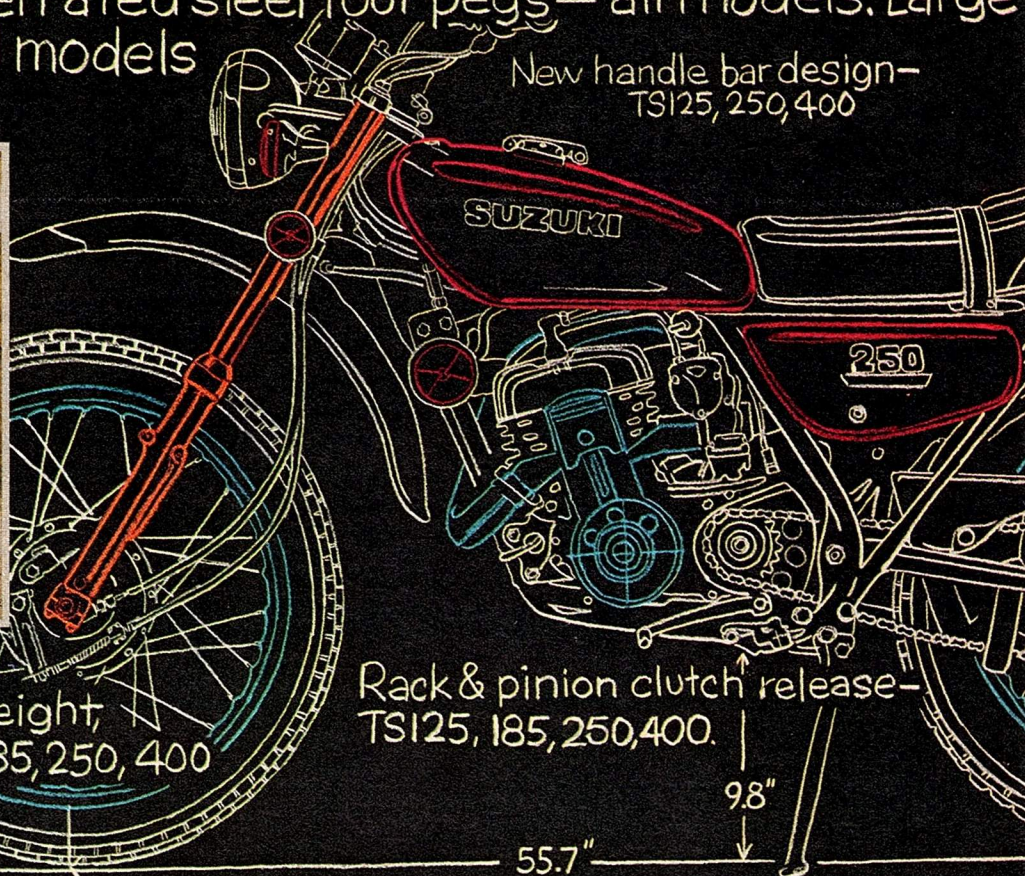
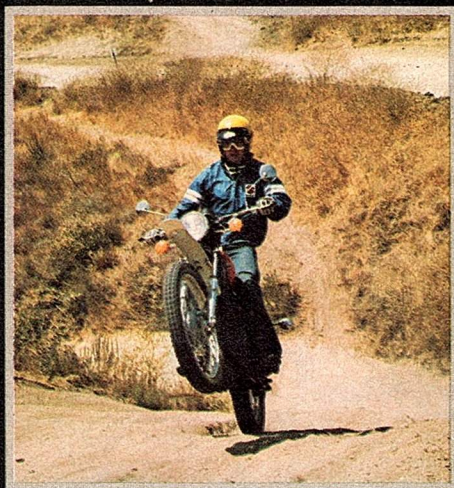
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*For reprints of all features in this series, plus a brochure on fairings and the Windjammer III, write to us.



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TS75 COLT



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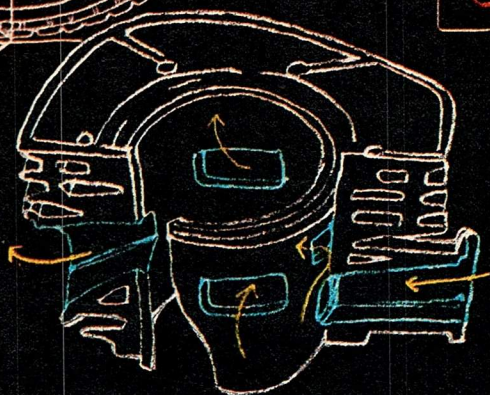
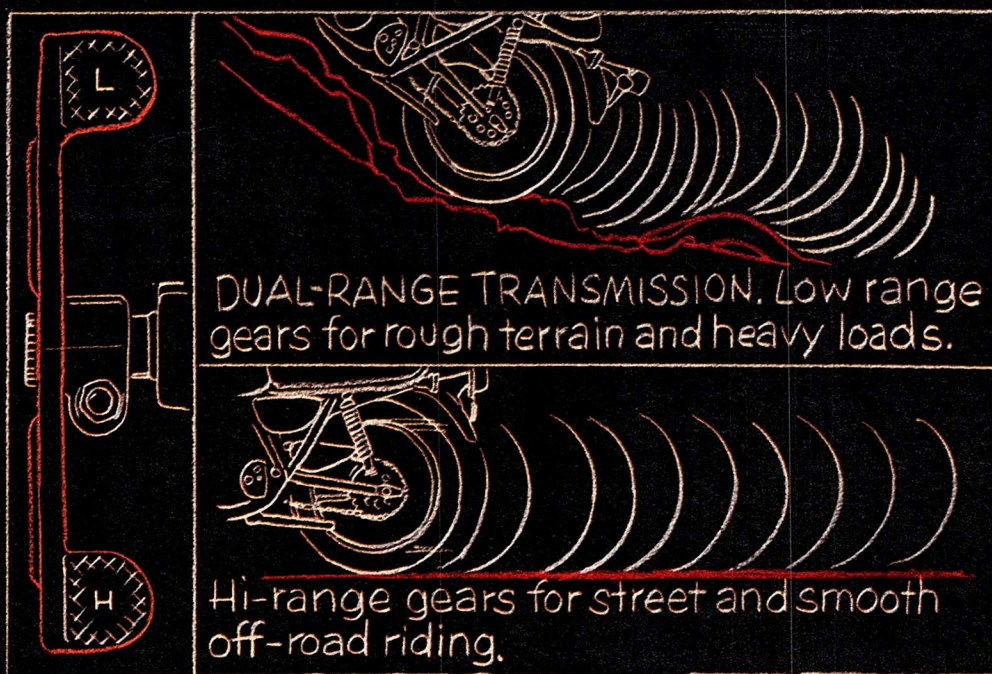
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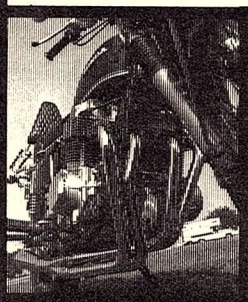
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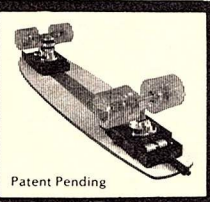


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speed handling erratic and the ride very rough. Those riders who will use the XT500 mostly in the dirt will be wise to install knobby tires fore and aft. They will increase off-road traction markedly and improve steering, acceleration and deceleration. The stock block-pattern tires give borderline performance at best. Along with the tire change, good shocks and fork springs will make for a more comfortable and secure ride when off the pavement.

The brakes on the Yamaha thumper are quite touchy and panic stops will demand smooth, prudent pressure on the levers. The gas cap doesn't leak, but its screw-on design is a time-consuming nuisance when fueling-up. Also, the gas tank should be larger to guarantee at least a 100-plus mile range.

The off-road side of the XT500 is clearly evident. It is a compromise motorcycle designed for both riding elements—street and dirt. It does not excel in rigorous dirt applications because of its weight, mediocre acceleration and poor suspension. But riders who take off-road riding with less-than-grim intent will find the XT's engine delightful. Smooth, tractable power delivery, clean running, easy starting and dependability make the XT500's engine ideal for excursions on easy trails and dirt roads.

In terms of its street-going abilities, we feel that the XT-500 is superior to all other dual-purpose motorcycles. It's a little rougher and a lot faster than Honda's 350 single and far more pleasant than any comparable, big-bore two-stroke. It may be geared a tad high for trail-riding; but the same gearing produces 55 mph at an easy 4200 rpm indicated, and 70 mph at about 5200; with a redline at 6500 rpm and a safe upper speed limit of 7500, freeway and highway cruising speeds find the big single operating right in the fat part of its torque curve. Passing in top gear is a lead-pipe cinch; once the bike has attained a speed of 40 mph or higher, downshifting is a waste of time and effort.

Not that it would take much effort; the XT's power delivery components function almost perfectly on the pavement. The clutch's narrow engagement span can be gotten used to after two or three stop-lights, and if you feel like using the clutch for up-shifts (it didn't seem necessary) it's right where you want it. Ratio spread isn't nearly as critical with a high-torque, low-speed engine as it is with a highly-tuned, peaky motor; still, the Yamaha's gear-spreads feel optimum, and the transmission works with a precision and a lightness that few pure street transmissions deliver.

What suspension problems the XT-500 has off-road simply do not exist on pavement. When the time came for the bike's street-only evaluation Yamaha had supplied, and we had installed, a fresh pair of conventional XT shocks; its semi-knobby tires aside, the big single was ready for the freeway and Racer Road. If you've been a loyal *Cycle* reader for a few years you know that one of our pet peeves is front suspension non-compliance. You can count on the fingers of one badly mutilated hand the street bikes that have front fork assemblies that react properly to one-inch or smaller surface irregularities; the BMWs, the new RD-400 Yamaha and some of the smaller-displace-

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ment Suzukis are all we can think of. Add the Yamaha XT, which complies to the small lumps and bumps that make the riders of other big-bore pavement bikes feel that someone in the dark of night has welded the sliders to the fork pipes. Feel from the shocks, while not quite as comfortable, is well within acceptable limits. Other elements, while they may not add to comfort, don't detract from it either. Vibration is the low-frequency, wide-amplitude kind that doesn't gnaw a hole in the seat of your pants or put your hands to sleep, and while the seat isn't as cushy as that of a R/90 or a Guzzi, it's more than acceptable.

Whether or not the bike's upper-line narrowness is appealing is a subjective thing, but the fact is a long-legged rider can just about bang his knees together above the fuel tank, and once you get used to the XT's narrowness other street-tooters seem bulky by comparison. Too, you sit down in the Yam, an impression fostered by the bike's high, wide handlebar.

A devout pavement rider would take one close look at the XT's tires and promise himself that exciting lean-angles are out of the question. They are—the tires simply do not hold as well as even the most prosaic street rim protectors. But once safe lean angles are defined and established in the rider's mind the XT can be hustled through turns with a level of stability not generally found in other street medium-weights. However limited the XT's suspension may be off-road, it is superior, in terms of high speed street cornering stability, to all but the best. Weight and power are the enemies of high-speed cornering stability, of course; since the Yamaha has comparatively little of either it tracks around sweepers accurately and smoothly, with none of the loss of damping or progressively severe frame deflection that leads to that unsettling gallop known as "wallow". Ground clearance on the high 'n' narrow XT never enters the street picture; touch down a footpeg or part of the exhaust system and you're already a goner.

The XT-500, then, has a lot of street charm—maybe more there than in the dirt. It's as unobtrusive on the pavement as you could expect any half-a-liter four-stroke single to be, easy to live with, tough, straightforward, utilitarian and reliable. Off-roaders sometimes rail at dual-purpose bikes because the bikes aren't as focused as they would like them to be. Yamaha has done a superb job of spreading this bike's attributes broadly enough to make the XT solidly acceptable on pavement and potentially brilliant off-road. Displacement is the touchstone of the XT's character; displacement is what gives it the range that it has. As of this moment the Yamathumper is the only bike of its kind being manufactured. It's been a long time coming—and it'll be a long time here.

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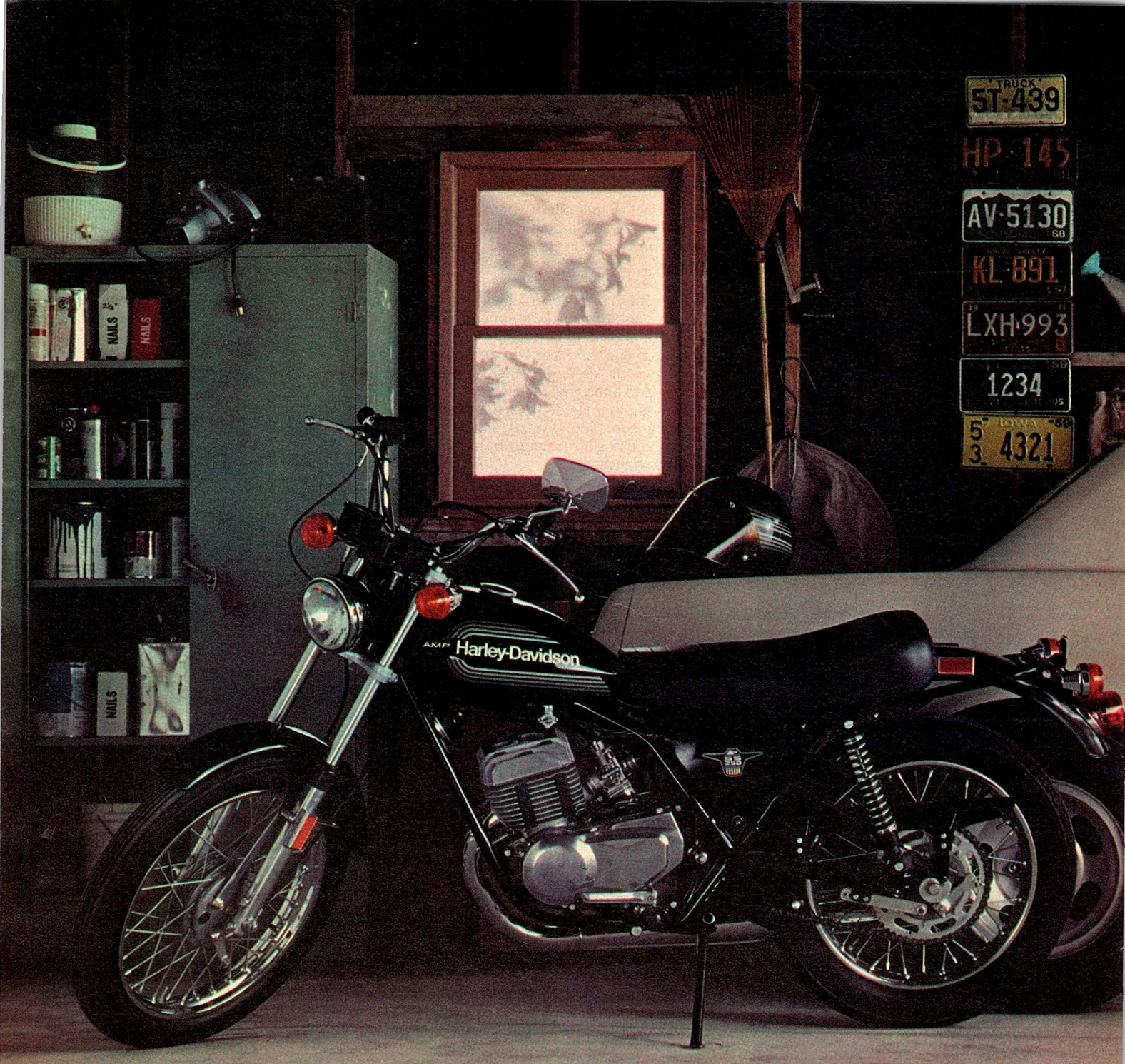
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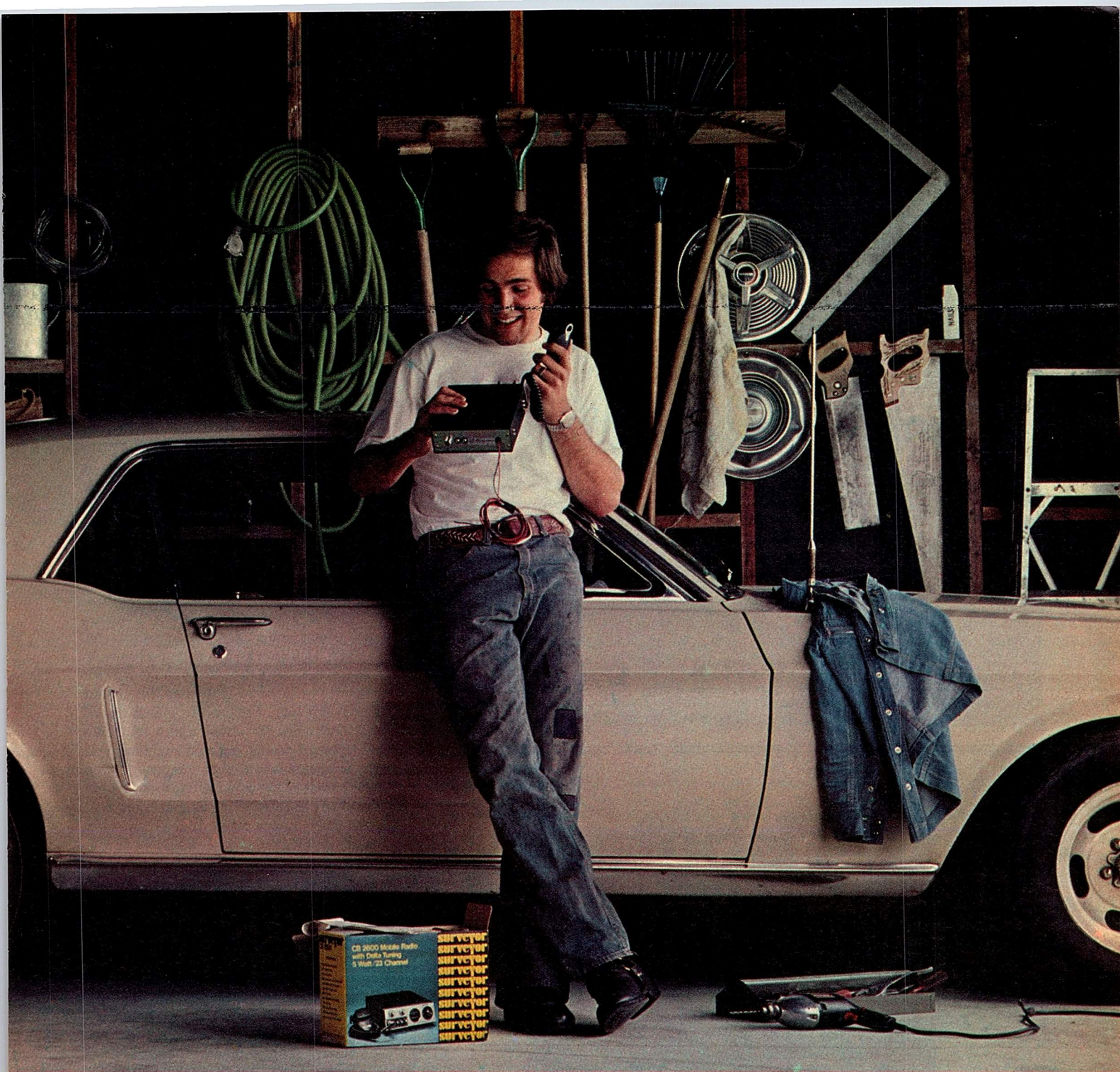
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FIRE ENGINE Continued from page 51

engine making the main frame stronger and more compact than before. While the bolt-up feature may have contributed nothing to frame rigidity, the revised frame certainly improved the MV's handling.

Surtees left motorcycling to go grand prix car racing after winning his final 500 title in 1961. Hocking bagged his first and last 500 title in 1961 and followed Surtees into automobiles in 1962.

Enter Mike Hailwood. In a world of perfect logic, one could argue that the big MV was such an awesome mechanical contrivance that only a technician/engineer/racer could manage the machine successfully. Hailwood made shambles of that perfect logic. In almost no way was Hailwood a technician, and he never claimed to be. In fact, he openly admitted he knew very little about the comings and goings inside an engine or the resolution of physical forces in frames. That didn't matter in part because the MV four had already been developed before Hailwood arrived.

But there was a much larger reason why Hailwood excelled despite his non-technical approach to racing. As his racing career unfolded it became increasingly obvious that the sum of his talent lay in his incredible ability to ride. The MV rider-technicians could go fast, thanks to what they knew about the machinery and what they could do with the bike. Hailwood's speed rested totally on what he could make any bike do. He could go fast when a machine was right, and fast when it was wrong. Wrong tires? Hinge-in-the-middle? Hailwood rode around the problems. He simply could ride racing motorcycles better than anyone else. There's no other way to explain what Hailwood could—and did—do.

The Hailwood/MV Agusta combination proved invincible. To him the MV was a beautiful bike: easy to ride and reliable as a rock. "Old Faithful," he called it, and together they owned the 500 World Championship from 1962 to 1965. Opposition was spotty but it existed. Scuderia Duke, Gilera-equipped, tested MV power in 1963 with Phil Read and John Hartle. Everyone soon discovered, however, that the Gileras were brilliant 1957 motorcycles. But the MV was a 1963 racer, and the Ghost of Gilera Past evaporated.



Three MV fours from the 1950-1965 period survive: the very first model with parallelogram swing arm and shaft drive; a Les Graham Earles-fork model; and Hailwood's last racer from 1965. Hailwood's "big" fire engine is smaller than one might imagine. The wheelbase measures 53.5 inches, but the bike is curiously long on the top despite its short wheelbase. The 1962-65 version of Mike Hailwood was tall and rangey, and MV tailored the four to him. Six footers fit the bike with easy comfort, but shorter riders must stretch for the controls. Race-shop mechanics built gas tanks contoured for individual riders; consequently the tank is just as personal as the basic ergonomic dimensions. So too are the footpegs, tilted up according to Hailwood's liking.

Some things would amaze and delight any observer, such as the tiny cable wheel (running on a ball bearing) located at the hand brake lever. Instead of using a small balance bar to equalize the cable pressure to both sides of the four-shoe front brake, the tiny wheel handles the task. And no outside supplier built the same fork; MV manufactured it. In the same way, the massive drum brakes were peculiar to MVs.

So long as the motorcycle wasn't revved beyond its 11,000 rpm limit (which would mangle valves), the engine was dead reliable. Nor was it particularly fussy about the jetting in its four 28mm carburetors. With six speeds and 72-74 horsepower, the 165 mph motorcycle could deal with all comers in 1965.

Then came 1966 and everything changed. Hailwood moved to Honda and the Japanese introduced their brand new 500cc four, a four-valves-per-cylinder engine that possessed all of Honda's accumulated engine technology. Giacomo Agostini, Hailwood's understudy, became MV's Number One in 1966. But Agostini never liked the elderly four; for him it was too big and too heavy. And the four was far too slow for the 1966 season. MV finally wheeled out the old fire engine's replacement, a tiny 420cc three-cylinder projectile based on MV's 350cc triple. The four was dead, almost.

Rain blew down in waves at the Belgium Grand Prix in 1966. After practice Agostini considered his options. He could run the aged four-cylinder truck in the miserable conditions, or take his chances with the faster but less reliable three-cylinder. Ago went with the four.

In a driving downpour the outclassed MV trailed Jim Redman's Honda around the course. Redman soon crashed in the rain, breaking his arm; then Hailwood's Honda splashed by Agostini and opened up a 90-second lead. But after ten laps Hailwood's bike broke its gearbox. So in the Belgian rainstorm, the MV four inherited its last grand prix victory.

The next day the rain was gone, and so was the old fire engine.

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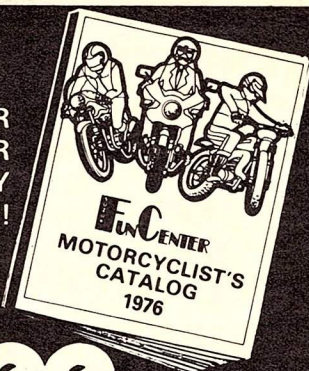
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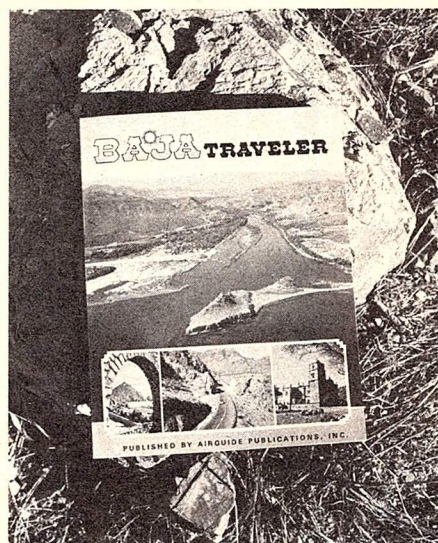
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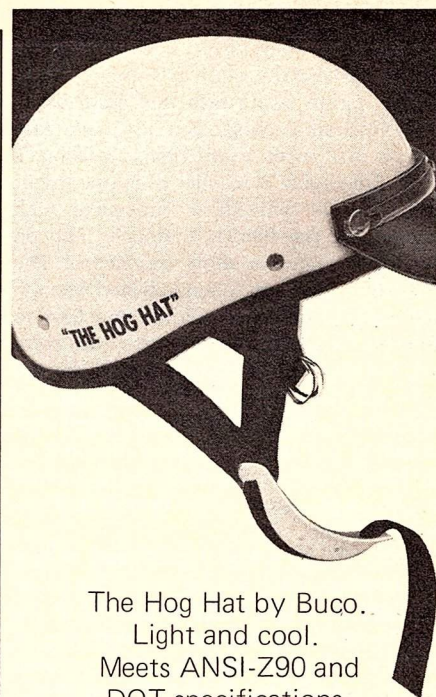
Baja Traveler
Airguide Publications



● A few years ago only bold and resourceful enthusiasts—on two wheels and four—made the trek from the Southern California border down the Baja Peninsula of Mexico. The trip, with more than a 1000 miles of murderously rough dirt roads, used to take weeks. But in 1973 the trans-peninsular Highway One officially opened, making it possible to cut the journey down to days. Outside major towns and resorts, most of Baja's rugged frontier and historical sites have been untouched despite Highway One. Few, if any, first-time Baja travelers return home disappointed; the overland trip to the tip of Baja is a genuine adventure.

Dozens of Baja guides have been published, especially since the opening of the main highway. Few of these publications are worth anything, and none are complete. The single exception to this generalization is Airguide's *Baja Traveler*. In part the book is aimed at those who pilot their private planes into Baja. However, there's more than landing-strip diagrams and fly-jockey information, and the 276-page book makes a superb companion for the overland traveler as well.

The photography, both color and black-and-white, is outstanding. As you might expect in an air guide, there are ariel photos of most points of interest, including missions, fishing ports, bays and resorts. There are also photographs of indigenous fish, wildlife and vegetation; so if you get nose-to-nose



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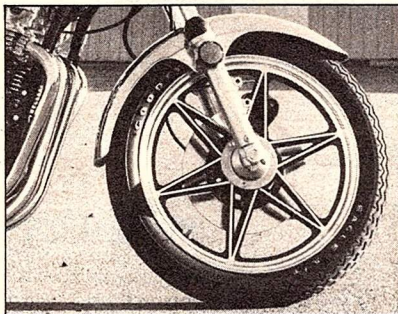
Baja Traveler is divided into six main sections: general information; marine life; Baja north; Baja south; Mexico mainland; and driving through Baja. For the first-time traveler every section is must reading, and veterans of Baja will find a lot of useful information too. The general-information section provides data on border-crossing procedures, customs, hunting and fishing licenses, road signs, Mexican currency, and—most importantly—maps. Follow the guidelines in this section and you'll avoid the difficulties which befall unprepared travelers.

The peninsula is divided into two states, and the sections on upper and lower Baja display and discuss each resort, town, camping area and tourist attraction thoroughly. Deep-sea and coast-line fishing are excellent in Baja and the marine-life section covers this aspect beautifully.

Accommodations of every town and resort are noted. Included are average rates, quality of facilities, overland directions, on-site activities and reservation data. Travel distances and advice on the best time of year to visit are likewise given.

Baja Traveler is available in two versions, hardbound for the motorcyclist or motorist (\$12.90), and loose-leaf for the pilot (\$17.90). The book is available from book stores or by mail-order from Airguide Publications, 1207 Pine Ave., Long Beach, CA 90901. ©

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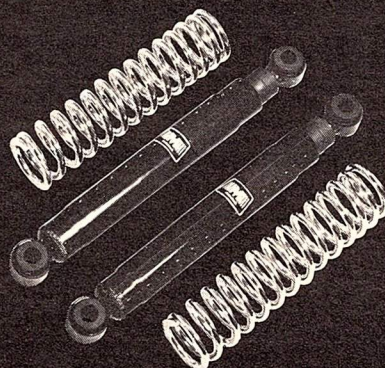
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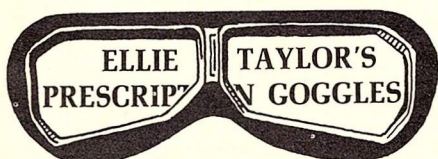
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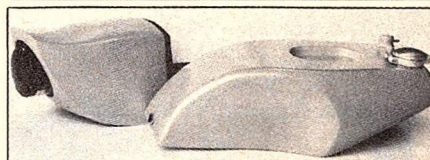
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alone 25¢ Over 50,000 satisfied customers.

Write today: POPLAN, Dept. DCYE-14,
105 N. Columbia, Chapel Hill, N.C. 27514

RECORDS, HI-FI AND ELECTRONICS

RECORD RATERS WANTED! Anyone qualifies. We ship
you nationally released LP's to rate. We pay postage and
handling. You pay nothing for LP's. All you pay is small
membership fee. Applicants accepted "first come basis."
Write: E.A.R.S., Inc., Dept. CY, 6162 Washington Circle,
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WANTED TO BUY

BMW R75/5 front end. Any or all. Tank. Pete Hutto, R1 Box
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MISCELLANEOUS

IDENTIFICATION Cards, send stamped self-addressed en-
velope for samples. NIPCOF, 727 North Main, Las Vegas,
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SLEEP LEARNING. Hypnotic Method. 92% effective.
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YOUTH pipes; water, wine, ice tobacco pipes. Send 35
cents for color catalog from Toro Boy, Box 1644-B, El Toro,
CA 92630.

Advertiser's Index

Service Number	Advertiser's Index	Page No.
51	Action Four's	82
	Amco	9
39	American Honda/Report	3
50	American Honda/Cycles	91, 92, 93
	American M/C Institute	108
	American M/C Mechanics School	96
	American Safety	118
52	Ancra	113
	Bates Accessory House	2
46	Bausch & Lomb	11
	Beck-Arnley Corp.	19
	Big Four Distributors	8
38	BMW	62, 63
	Buco	18
	Bullworker	43
60	Can-Am	84
	Carbooks	18
33	Carlisle Tire & Rubber	105
26	Castrol Oil	52
	Circle Industries	81
	Clinton Cycle & Salvage	98
	Competition Chemicals	18
	Cycle Engineering	117
	Cycle Rider	102
	Datsun	61
	Denco	82
	Dick's Cycle West	98
	Dodge	59
23	Ford Motor	37
	Freedom Industries	102
58	General Motors/Chevrolet	34
45	General Motors/Oldsmobile	7
	Goodyear Tire & Rubber	14, 15
	Grant, Mel	102
44	Gunk Laboratories, Inc.	83
47	Hap Jones Distributing	20
24	Harley-Davidson/Cycles	114, 115
56	Harley-Davidson/Parts	Cover 4
43	Hodaka	27
	Honda Of Mineola	96, 97
	Hooker	101, 112
40	Interpart	119
54	Interpart	116
37	Interpart	117
36	Jardine	108
	Jeep	16, 17
31	KK M/C Supply	104
57	Kawasaki	88, 89
21	Kawasaki	116
32	Kensington Prods./Bikoni	80
	Langlitz	113
55	Lester Tire & Wheel	87
35	Lockhart Industries	107
	Lorillard/Newport	47
	MacMillan Ring-Free Oil	90
22	Midwest Mutual Insurance	90
	Morris Industries	24
	National M/C Club	5
	National Products	118
	National Systems/M/C Repair	18
	Northwest Motoelectric	2
27	Norton	Cover 2
	Old Spice	33
48	Penreco/Gumout	21
	Pridmore, Reg	107
	Racecrafters	102
42	Radio Shack	83
30	Reeder, Inc.	74
	R.J. Reynolds/More	38
	R.J. Reynolds/Salem	Cover 3
	R.J. Reynolds/Winston	78
	Road Rider	113
	SIE, Inc.	101
41	Shelby-Dowd	119
	Star Casting	82
	Suzuki Fun Center	118
62	Tex-All	10
53	Thermo-Chem	112
	Torque Engineering	96
	Tourmaster	104
	Trophyland U.S.A.	90
	U.S. Navy	65
	U.S. Suzuki	12, 13
25	U.S. Suzuki	94, 95
59	U.S. Suzuki	110, 111
	VDO Instruments	85
28	Vetter	109
	Village Togs	106
63	Wirges	24
34	Wixom	106
49	Yamaha/Parts	22, 23
29	Yamaha/Cycles	75, 76, 77
64	Yokohama Rubber	86
	Yuasa	74

Printed in U.S.A.

Information Service

Cycle Reader Brochure Service

Here's a listing of the latest in literature on commercially available motorcycle products. To receive any of the following materials, simply circle the number next to the item on coupon at right. Your request will be forwarded to the appropriate company.

101. The **COLEMAN COMPANY**, long famous for camping equipment, has introduced a new, portable, lightweight air pump. Circle this number for literature.
102. The **Daytona** frame mounted fairing is featured in this brochure from **MEYER PLASTICS, INC.** It fits most large street bikes.
103. **LECTRON** gives complete information on their carburetors (30mm-40mm) and kits which feature "fuel-VU", the only plastic fuel bowl available, in a four page brochure.
104. **PACIFICO** has a full color leaflet with details on their full line of frame and handlebar mounted fairings.
105. The **AMERICAN MOTORCYCLE INSTITUTE** has information on their Motorcycle Mechanic resident training course. Package includes complete school catalog.
106. Chain belts, leather belts, buckles and shades come to you from **MM Limited**. Circle this number for full details.
107. **AMF HARLEY DAVIDSON** has a full color brochure on their 125cc to 250cc street and enduro models for 1976.
108. **SIGNAL SENTRY INDUSTRIES** has developed a self-cancelling turn signal system, described in their fact sheet, for the convenience and safety of the rider.
109. **LUBRI-TECH** has a listing of their product line including paints, lubricants, polishes, sealers and other quality motorcycle chemicals.
110. The "Feather Weight Plate", a 1½ oz. mylar MX number plate of regulation size, is now available from **KRAUSE COMPETITION CYCLE**. Supplied with their leaflet is information on how to order.
111. Front forks and the new "HR" Series of **CERIANI** adjustable hydraulic dampening forks come to you in a six page brochure.
112. **KIMSTOCK, INC.** offers a colorful six page brochure featuring the Voyager line of fairings and saddle bags, as well as tie downs, ramps, and more.
113. Application charts for heavy duty batteries available for all major motorcycles are now available from **AMERICAN MADE BATTERY**.
114. The **ARTHUR FULMER CO.** describes the construction, finish, fit and standards of their safety helmets. Brochure includes safety testing procedures and helmet guarantee.
115. A tunable bolt-on air suspension system available for street and competition motorcycles is described in an 8 page brochure from **REEDER, INC.**
116. From **MARUBENI CORP.** comes an illustrated catalog with information on *Red Wing* suspension systems. Features a complete shock absorber cross-application chart.
117. In the interest of safety, **MIDWEST MUTUAL INSURANCE COMPANY** offers a pocket size pamphlet with useful riding tips for beginning riders. Good for a friend just getting into riding.
118. **FILTRON** Air Filter elements for off-road and street applications are the subject of this brochure from **INTERPART CORP.**
119. **M/C ENTERPRISES** offers a catalog of accessories, including fold up hi-way bars, sissy bars, entire instrument panels, and more, for all types of Motorcycles.
120. **CIRCLE INDUSTRIES** displays a line of chain and sprocket kits, tiedowns and other quality accessories in this fact sheet.

For any of the above information circle appropriate number on a coupon at right!

Here's how you can get additional information concerning products and services advertised in this issue, the New Products Editorial Section, and the listing on this page:

1. Clip one of the coupons. Print, or type, your name and address as indicated. Be sure to include Zip Code.
2. Please circle the number on the coupon which corresponds to the number at the bottom of the advertisement, New Product listing, or next to the item in our brochure listing on which you wish further information.
3. Enclose 25¢ to cover our processing costs. Your name will be forwarded to each company from whom you have requested further information: Listed companies will mail out literature as they deem appropriate.
4. Mail Coupon and 25¢ to: Cycle
P.O. Box 2904
Clinton, Iowa 52732
5. Allow 4 to 6 weeks for receipt of literature and information.

CYCLE, P.O. Box 2904, Clinton, Iowa 52732
 EXPIRES JULY 31, 1976 CC 5/76
 Name _____
 Address _____
 City _____
 State _____ Zip Code _____

CYCLE, P.O. Box 2904, Clinton, Iowa 52732
EXPIRES JULY 31, 1976 CC 5/76

Don't Forget
A Quarter
For Processing

25¢

Name _____

Address _____

City _____

State _____ Zip Code _____

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1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52
53	54	55	56	57	58	59	60	61	62	63	64	65
66	67	68	69	70	71	72	73	74	75	76	77	78
79	80	81	82	83	84	85	86	87	88	89	90	91
92	93	94	95	96	97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112	113	114	115	116	117

[illegible]

point? It's a viewpoint based on youth, inexperience perhaps, but a viewpoint shared, I think, by younger riders.

I'm 21 now, and I've been riding for six years. When I entered the scene, the Honda 750 was brand new, untested—but yet, proof that the Japanese were here to stay. I never contemplated buying anything other than a Japanese bike, for the simple reason that few people that age start out riding large displacement motorcycles, and that was all the British and the American were making, really. So I began on a small Suzuki, a 50cc to be exact. Now I ride a Honda 750—certainly well tested after six years. I intend to move up to a GL-1000.

In that six years, BSA has left the scene. Now Norton-Triumph. Who will be next—Ducati, maybe? Laverda? Benelli? Harley-Davidson seems strong—but you said yourself, it's because they make Harley-Davidsons which are almost synonymous with motorcycles, but not quite. BMW will stay, for the simple reason that people will always be willing to pay for quality, whatever the price, and BMW is indisputably the king of quality.

My own experience with wonderbikes of the past is slight; there just aren't enough of them around. I'll probably go to my grave without ever riding a Desmo Ducati, or a Rocket 3, or a Trident, or a Benelli Six.

My point is this—when your older readers write, it's almost like they are saying look at what you missed. You've got your ultra-dependable, if soul-less, Honda, and it's a good bike. But look at what you missed—your Honda will never handle like a Triumph. It will never burn up the road like a Ducati. With all its plastic and beepers and chrome and gadgets, it will never have guts like a Norton Commando.

Maybe not. But the Japanese control the scene now. Who knows who will be the sales leader in twenty years? Maybe in twenty years the Mongolians will take over the world with bikes that handle, and haul, and don't vibrate, and leak nary a drop of oil. Maybe in twenty years it will be the Australians. Or the Venezuelans. Who knows.

But you can bet that someday, Japanese motorcycles will be gone, replaced by something else—hopefully, by someone who makes them better. It may seem unlikely, but then twenty years ago, it sure must have looked like the British were here to stay. When I'm old and gray, and the Mongolians, or whoever, have taken over, I'll probably be writing into the magazines with a message like—look at what you missed. The Japanese bikes I grew up with—they were the real motorcycles. They had class. They should have lasted forever. Etc.

To paraphrase C.S. Lewis, "Haven't you noticed how there are different phases, and while any one phase is going on people get into the habit of thinking and behaving as if it was going to be permanent?" Change is inevitable. If the British phase is over, I mourn its passing, even though perhaps I never really knew what it was all about.

But don't look down on the Honda riders, or the Yamaha riders, or the Suzuki riders—they are just enjoying the best of what's available. The Japanese learned from the British—believe it. It's true. And whoever follows this phase will have learned from the Japanese.

That's what progress is, my friends. If it weren't for that progress we'd all be riding Daimlers with wooden wheels.

Thomas M. Mills
Bryan, Texas

CANADIAN GROUSE

As your typically patriotic Canadian, I feel I must take exception to a reference in the Laverda 1000 test—that is "there are Laverda distributorships scattered throughout much of the habitable earth and Canada."

I know Canadians are fairly quiet, and perhaps you were trying to determine if we really read the magazine, or just looked at the pictures, but I think it was grossly unfair. I mean, what would your British readers think?

And besides, Canada is not all that uninhabitable. There are ghettos in Toronto and Montreal as fine as any in the US, even the one where your magazine appears to come from. And to make matters better, we have great stretches of twisty-turny across the wastelands separating our ghettos, and great opportunities to make use of the capabilities of above-mentioned Laverda.

John Wroe
Barrie, Ontario, Canada

POLYESTER PURSE

No longer do I suffer sleepless nights—waking in a cold sweat—agonizing over the chimerical folly of it all. No longer am I alone. Somewhere out there breathes a quixotic soulmate to comfort me.

Bob Sparkman and his "Café Enduro" really raised a loving smile. Two years ago, inspired in part by the TSS also, I tenderly carried my '71 Bultaco 360 Montadero out to the barn and there disrobed here. With hardly a murmur she accepted her new 19' front Akront with Hurst-Airheart dual discs, Dunlop K-81's front and rear, Koni shocks, Bandido expansion chamber, Super-Trapp silencer, rear-sets, Tomaselli clip-ons, and Dunstall fairing, tank and seat. It's at the external gearing limit with 17 tooth countershaft and 40 tooth wheel sprockets. There are lots of lesser alternatives and touches but like Sparkman's, the engine and suspension are stock.

It's no open-road rocket but that was never the intent. Myself, I have great fantasy fun with this light, excellent handling spawn of a jackrabbit and a shameless peacock. And finally, I'm satisfied that one can really make a silk purse out of a sow's ear—well, at least a polyester purse.

George A. Chaffee
Manchester, New Hampshire.

FERODO

In the December issue of Cycle magazine you carried a test report by Sam Moses on the Suzuki GT 750L. At the end of the article was a list of suppliers and we were mentioned as suppliers of Ferodo pads. This is of course correct, but we do have two agents in America who handle all U.S.A. orders: the Eastern section by Tom Hayner, 22825 14th Street, Newhall, CA 91321, and the Eastern section by Bob Pepper of Performance Research Organization, P.O. Box 445, Grafton, Massachusetts 01519.

We would be most grateful if you could mention this fact to your readers to keep the record straight.

P. J. Dunphy
London, England
CYCLE

CENTAUR

Ok, you guys, I just read the Feb. 76 issue, and did a little reading about London road racing and found that riders depend on horsepower to get them out of trouble. So here's my rendering of the ideal road racer to tear apart TZ 750s, 8-cylinder Can-Ams and BSA one-thumpers.

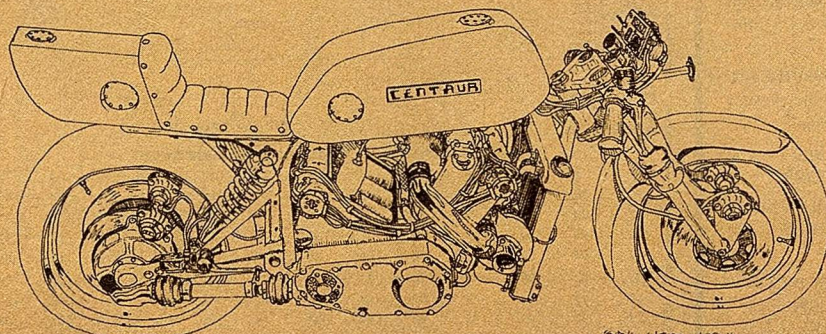
The engine is a DOHC V6 water-cooled with turbochargers and dual ignition, not to mention gear-driven camshafts and fuel injection.

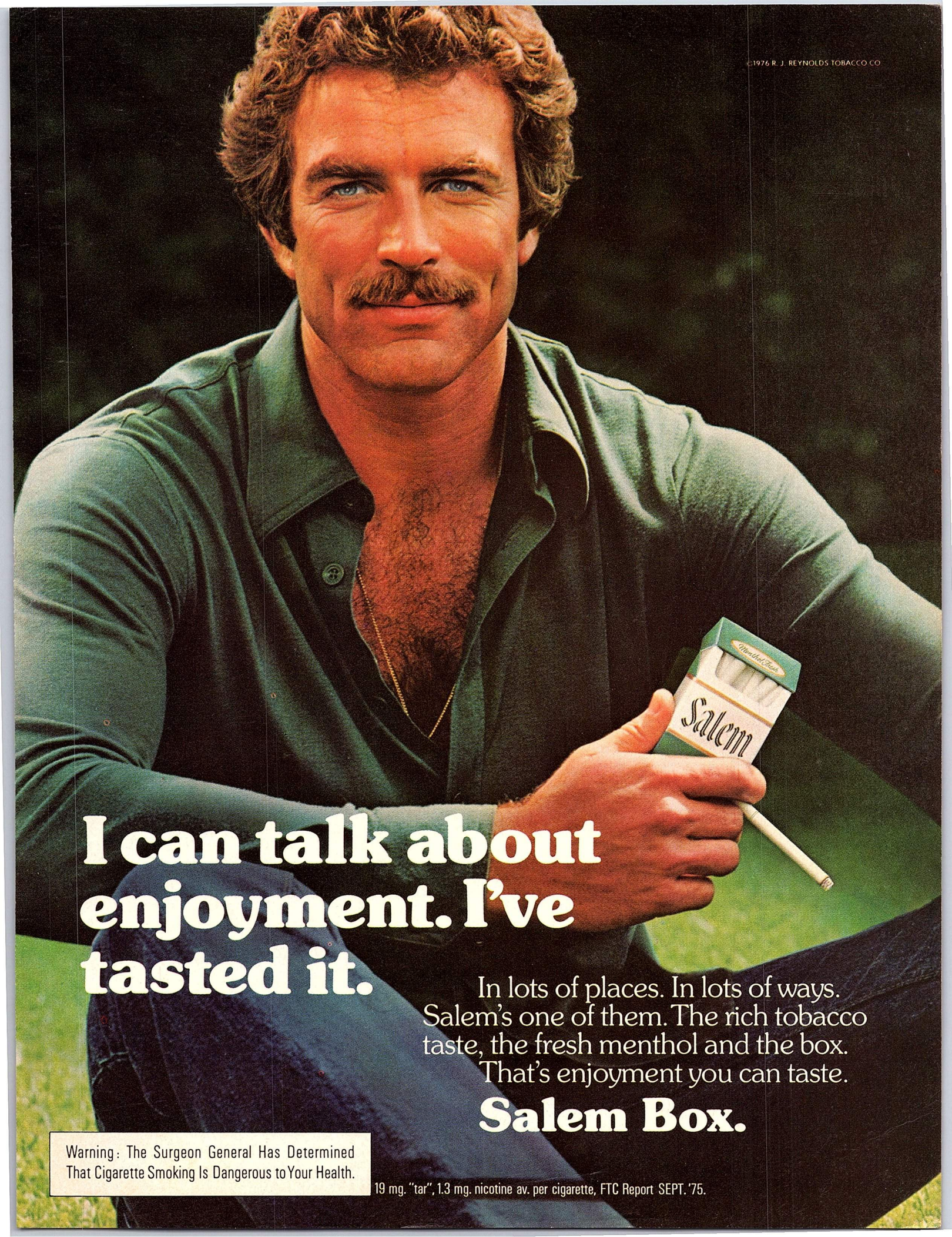
The fuel pump is driven by the second cam and the water pump is driven by the crankshaft on the left side of the engine.

On the right side (shown) is the flywheel, clutch and gearbox drive. The transmission is a four-speed automatic, something like the new one Husky came out with this year. Also, note that this bike is shaft-drive, which throws out all chain problems and gives you a chance at four disc brakes and dry sump lubrication. It has a BMEP figure of 112 to 115 and a 8200 estimated rpm.

Now I'm not saying I know a lot about road racing or even motorcycles, but I do know what I like, so guys, top this one. The Pacific Northwest Benchracers ride again!

Butch Watson
Salem, Oregon





**I can talk about
enjoyment. I've
tasted it.**

In lots of places. In lots of ways.
Salem's one of them. The rich tobacco
taste, the fresh menthol and the box.
That's enjoyment you can taste.

Salem Box.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

19 mg. "tar", 1.3 mg. nicotine av. per cigarette, FTC Report SEPT. '75.

Did the No. 1 on his helmet help Bobby Unser win his second Indy 500? Ask his brother, Al...

We asked.

"Don't be ridiculous!" snapped Al, who's also a two-time Indy winner. "Bobby just got lucky this year."

So we sought Bobby's opinion.

"Don't be ridiculous!" he grinned. "I won Indy because of my superb driving skill, a hot-on-the-money car, a top-notch and speedy pit crew...and a lot of desire."

"The Harley-Davidson helmet had absolutely nothing to do with it."

So why do you and Al both wear Harley-Davidson X-100 helmets?

"Well..." mused Bobby, the current USAC racing champ, "the helmet looks good. And I like that No. 1 up top."

"Of course, we want the best possible equipment in our business. This Harley-Davidson helmet meets or beats all government safety regulations. It's full face. Tough-as-nails fiberglass with a fully cushioned shock liner inside. Face shield doesn't fog up..."

"It's just No. 1 with both of us."

Thanks, Bobby. Thanks, Al.

And thanks, folks, for reading this ad.

Now go see the full line of AMF Harley-Davidson helmets...from half shell to full face; complete with visors, goggles, shields and other accessories...at your Harley-Davidson dealer's.

Maybe our helmets will help you win, as much as they help the Unseers.

AMF
Harley-Davidson

For a 20"x30" full color action poster of Bobby and Al Unser's racing cars, send \$2.00 to: #75 U-Box 11407, Shorewood, WI 53211.

CIRCLE NO. 56 ON READER SERVICE PAGE.

